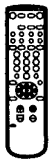
SERVICE MANUAL

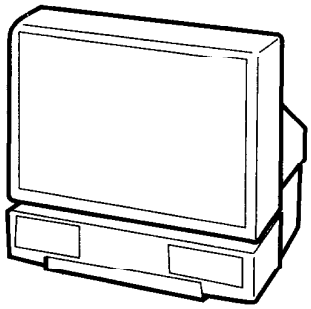
RA-2 CHASSIS

MODEL	COMMANDER	DEST.	CHASSIS NO.
KP-41T35C	RM-Y136A	Chile	SCC-N48A-A
KP-41T35K	RM-Y149	Korean	SCC-N50A-A
KP-41T35T	RM-Y136A	Taiwan	SCC-N51A-A
KP-48S35T	RM-Y136A	Taiwan	SCC-N51B-A
KP-48V45K	RM-Y901K	Korean	SCC-N50B-A
KP-53S35C	RM-Y136A	Chile	SCC-N48B-A
KP-53V45C	RM-Y901	Chile	SCC-N48C-A
KP-53V45K	RM-Y901K	Korean	SCC-N50C-A
KP-53V45T	RM-Y901	Taiwan	SCC-N51C-A

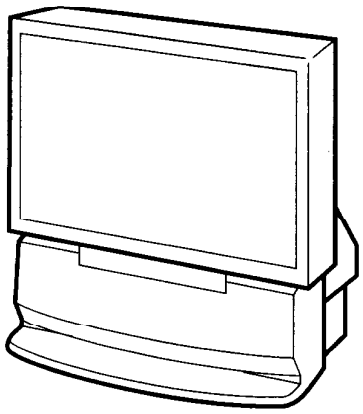


RM-Y136A

RM-Y149/Y901/Y901K



KP-41T35C/41T35K/41T35T



KP-48S35T/48V45K/53S35C
53V45C/53V45K/53V45T

MICROFILM

※ Please file according to model size. ..... ■

41 48 53

COLOR REAR VIDEO PROJECTOR

SONY®

SPECIFICATIONS

Projection system 3 picture tubes, 3 lenses, horizontal in-line system

Picture tube 7 inch high-brightness monochrome tubes (6.3 raster size), with optical coupling and liquid cooling system

Projection lenses High preformance, large-diameter hybrid lens F1.1

Screen size (measured diagonally)

KP-41T35C/K/T	41 inches
KP-48S35T/48V45K	48 inches
KP-53S35C/ KP-53V45C/K/T	53 inches

Television system American TV standards

Channel coverage VHF: 2–13 / UHF: 14–69 / CATV: 1–125

Antenna 75 ohm external antenna terminal for VHF/UHF

Inputs/output

VIDEO IN 1
VIDEO 2 INPUT
S VIDEO (4-pin mini DIN):
Y: 1 Vp-p, 75-ohms unbalanced, sync negative
C: 0.286 Vp-p (Burst signal)
75 ohms
VIDEO (phono jack): 1 Vp-p, 75-ohms unbalanced, sync negative
AUDIO (phono jacks): 500 mVrms (100% modulation)
Impedance : 47 kilohms
VIDEO IN 3
VIDEO (phono jack): 1 Vp-p, 75-ohms unbalanced, sync negative
AUDIO (phono jacks): 500 mVrms (100% modulation)
impedance: 47 kilohms
TV OUT
MONITOR OUT
VIDEO (phono jack):1 Vp-p, 75-ohms unbalanced, sysc negative
AUDIO (phono jacks)
500 mVrms (100% modulation),
Inpedance: 10 kilohms
AUDIO (VAR/FIX) OUT (phono jacks)
900 m Vrms (100% modulation)
impedance: 5 kilohms
(For 48/51 inches)
AUDIO OUT (phono jacks). 900 mVrms (100% modulation)
impedance: 5 kilohms
(For 41 inches)

Speaker Full range speaker 100 mm (3.9 inches) diameter

Speaker output 15 W × 2

CENTER SPEAKER IN: 30 W × 1 (NORMAL), 60 W × 1 (MAX), 16 ohms
(For 48/51 inches)
10 W × 2
(For 41 inches)

Power requirement

AC110 V, 60 Hz
(KP-41T35T/48S35T/53V45T)
AC220V, 50/60 Hz
(KP-41T35C/53S35C/53V45C)
AC220V, 60 Hz
(KP-41T35K/48V45K/53V45K)

Power consumption

Chile/Korean model
240 W
Standby mode: 7W
(For 48/51 inches)
220 W
Standby mode: 4 W
(For 41 inches)

Taiwan model
175 W
Standby mode: 3W
(For 48/51 inches)
165 W
Standby mode: 3 W
(For 41 inches)

	Dimensions (W/H/D)	Mass
41 inches	951 × 1,022 × 602 mm (37 1/2 × 40 1/4 × 23 3/4 inches)	55 kg (121 lbs 4 oz)
48 inches	1,106 × 1,337 × 571 mm (43 5/8 × 52 5/8 × 23 1/2 inches)	70 kg (154 lbs 5 oz)
53 inches	1,218 × 1,413 × 614 mm (48 × 55 5/8 × 24 1/4 inches)	73 kg (161 lbs 2 oz)

Supplied accessories

Remote control RM-Y149 (1)
(For KP-41T35K)
Remote control RM-Y136A (1)
(For KP-41T35C/41T35T/48S35T/53S35C)
Remote control RM-Y901 (1)
(For KP-53V45C/53V45T)
Remote control RM-Y901K (1)
(For KP-48V45K/53V45K)

Size AA (R6) battery (2)

Optional accessories

U/V mixer EAC-66
Connecting cables RK-74A, VMC-810S/820S, YC-15V/30V, VMC-720M
Stand SU-41T2 *(For 41 inches)*

Design and specifications are subject to change with out notice.

(●)• SRS (SOUND RETRIEVAL SYSTEM)

The (● SRS (SOUND RETRIEVAL SYSTEM) is manufactured by Sony Corporation under license from SRS Labs, Inc. It is covered by U.S. Patent No. 4,748,669. Other U.S. and foregn patents pendeing.

The word 'SRS' and the SRS symbol (●) are registered trademarks of SRS Lads, Inc.

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(CAUTION)
SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

WARNING!!
AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING!!
COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL FOR SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

(ATTENTION)
APRES AVOIR DECONNECTE LE CAP DE L'ANODE, COURT-CIRCUITER L'ANODE DU TUBE CATHODIQUE ET CELUI DE L'ANODE DU CAP AU CHASSIS METALLIQUE DE L'APPAREIL, OU AU COUCHE DE CARBONE PEINTE SUR LE TUBE CATHODIQUE OU AU BLINDAGE DU TUBE CATHODIQUE.

ATTENTION!!
AFIN D'EVITER TOUT RESQUE D'ELECTROCUTION PROVENANT D'UN CHÁSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ETRE UTILISÉ LORS DE TOUT DÉPANNAGE. LE CHÁSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!
LES COMPOSANTS IDENTIFIÈS PAR UNE TRAME ET PAR UNE MARQUE ⚠ SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIECES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÉCE EST INDIQUÉ DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIES DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LORS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

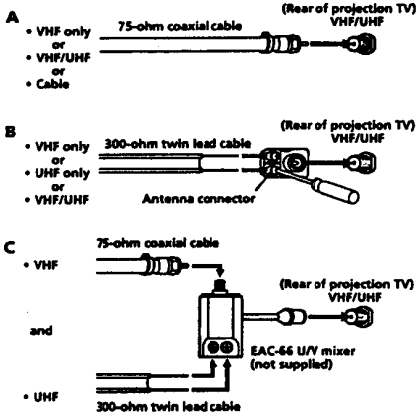
The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

Step 2: Hookup

Although you can use either an indoor or outdoor antenna with your projection TV, we recommend that you connect an outdoor antenna or a cable TV system to get better picture quality.

Connecting an antenna

Connect your antenna cable to the VHF/UHF antenna terminal. If you cannot connect your antenna cable directly to the terminal, follow one of the instructions below depending on your cable type.

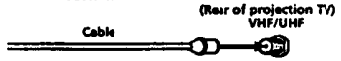


Notes

- Most VHF/UHF combination antennas have a signal splitter. Remove the splitter before attaching the appropriate connector.
- If you use the U/V mixer, snow and noise may appear in the picture when viewing cable TV channels over 37.

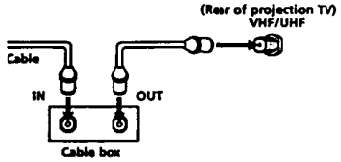
Connecting an antenna/cable TV system without a VCR

To cable or antenna

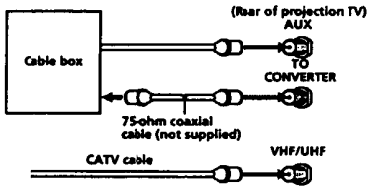


To cable box

If your cable company requires you to connect a cable box, make the connection as follows:



To cable box and cable



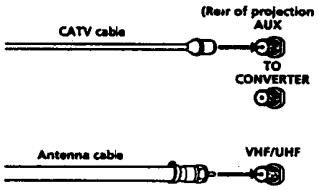
Pay cable TV systems use scrambled or encoded signals requiring a cable box* in addition to the normal cable connection.

* The cable box will be supplied by the cable company.

Note

- You cannot watch the signal through an AUX connector as a window picture.

To cable and antenna



Note

- Do not connect anything to the TO CONVERTER connector in this case.

Connecting an antenna/cable TV system with a VCR

For details on connection, see your VCR instruction manual.
Before making the connection, disconnect the AC power cords of the equipment to be connected.

After making these connections, you will be able to do the following:

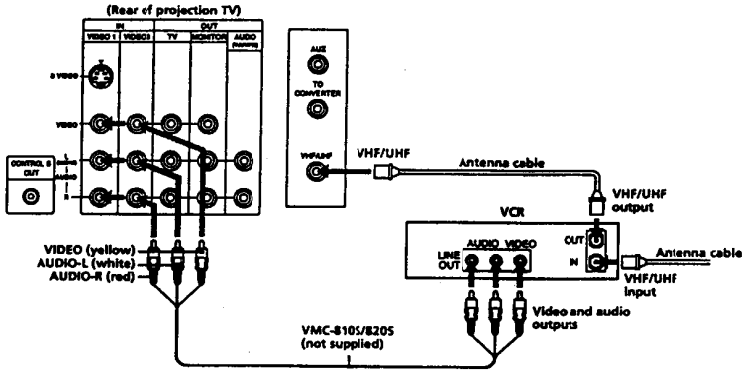
- View the playback of video tapes
- Record one TV program while viewing another program
- Watch two TV programs at once using PIP

To a conventional VCR

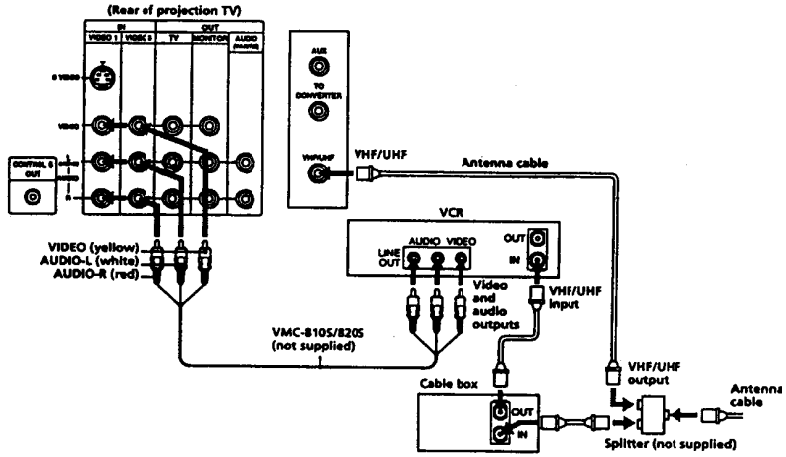
Note

- To connect a monaural VCR, connect the audio output of the VCR to AUDIO-L (MONO) of VIDEO 1/3 IN on the projection TV.

Without a cable box



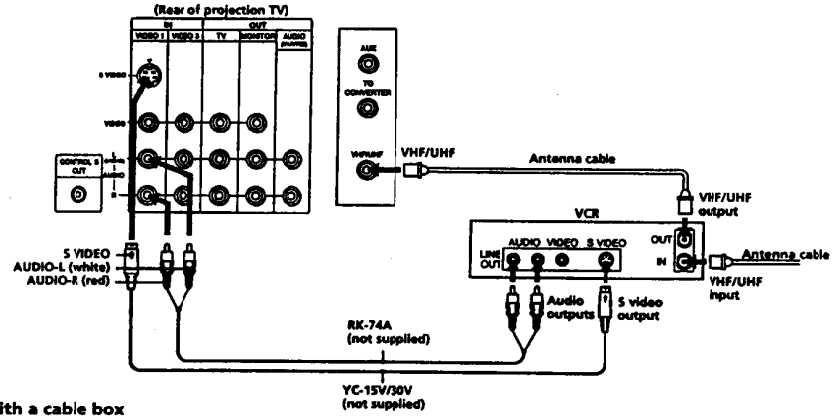
With a cable box



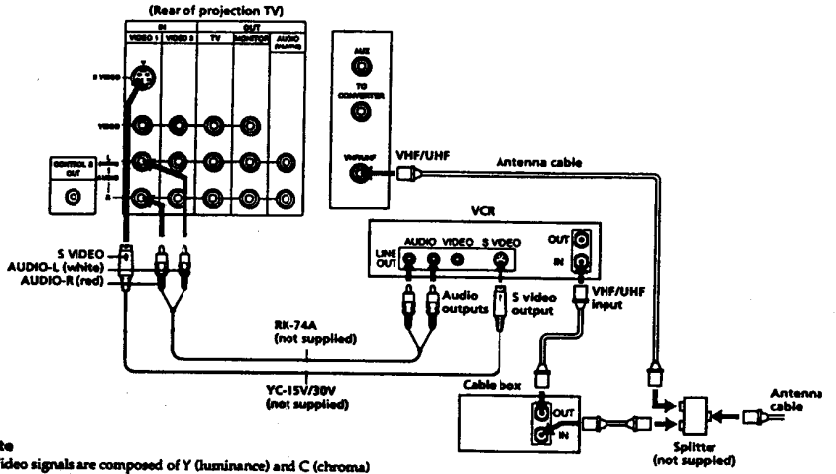
To an S video equipped VCR

If your VCR has an S VIDEO output connector, make the following connections.
Whenever you connect the cable to the S VIDEO input connector, the projection TV automatically receives S video signals.

Without a cable box



With a cable box



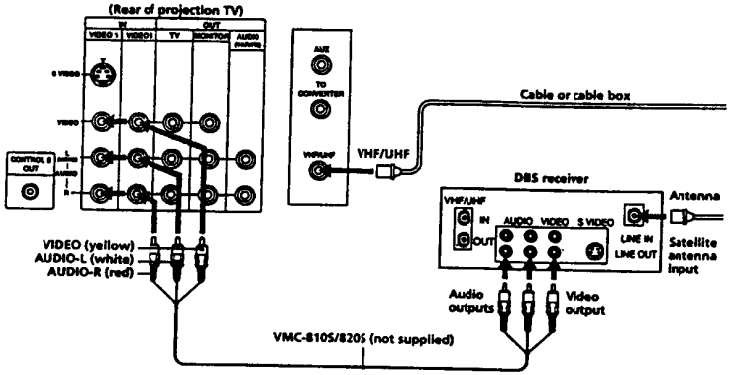
Note

- Video signals are composed of Y (luminance) and C (chroma) signals. The S-connection sends the two signals separately preventing degradation, and gives better picture quality compared to conventional connections.

Connecting a DBS receiver

For details on connection, see the instruction manual of the DBS (Digital Broadcasting Satellites) receiver.

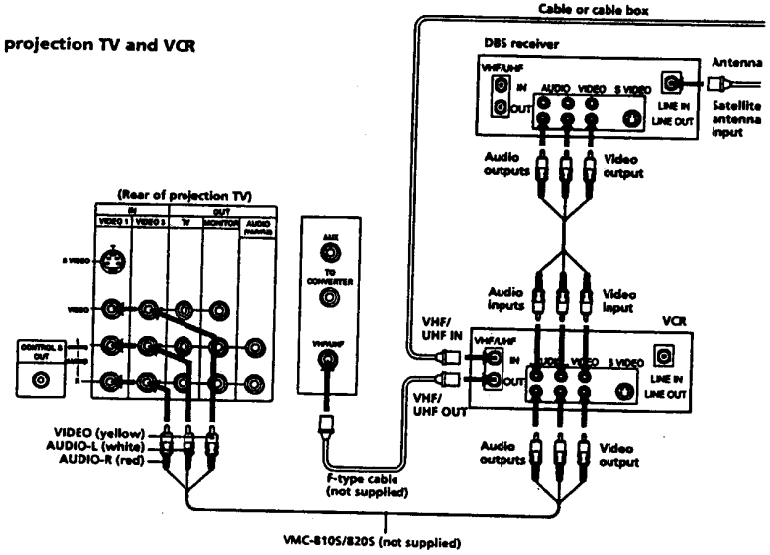
To a projection TV



Note

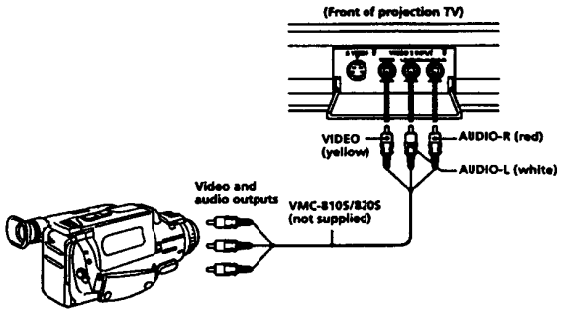
- You can use the S VIDEO connector or the composite video connector for the video connection.

To a projection TV and VCR



Connecting a camcorder

Use this connection to view a camcorder picture.

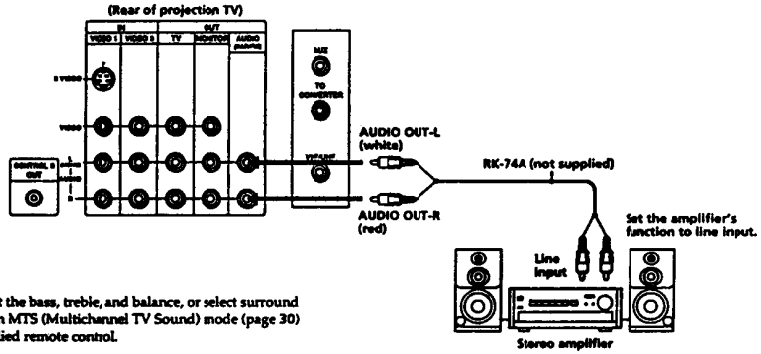


Notes

- To connect a monaural camcorder, connect the audio output of the camcorder to AUDIO-L (MONO) of VIDEO 2 INPUT on the projection TV.
- To connect a camcorder equipped with the S video output, connect the S video output of the camcorder to the S VIDEO connector of the projection TV.

Connecting an audio system

When connecting audio equipment, see page 28 for more information.

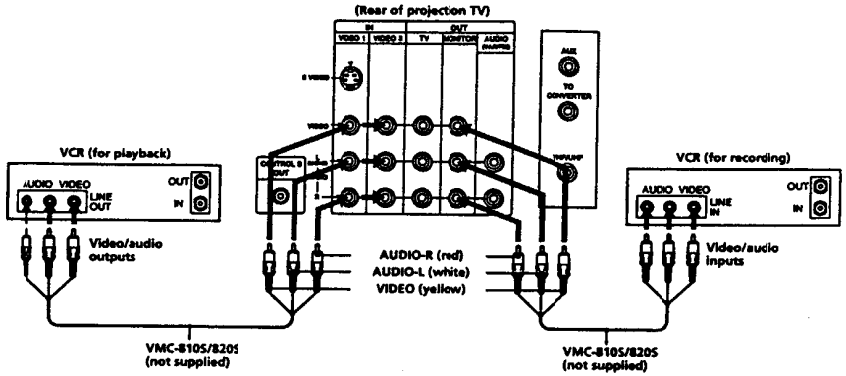


Note

- You can adjust the bass, treble, and balance, or select surround (page 29) or an MTS (Multichannel TV Sound) mode (page 30) with the supplied remote control.

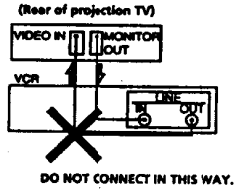
Connecting two VCRs for tape editing using MONITOR OUT

You can record input images displayed on the screen. This type of connection should be used only when you connect from the line input of one VCR, and from the line output of a second VCR.



Notes

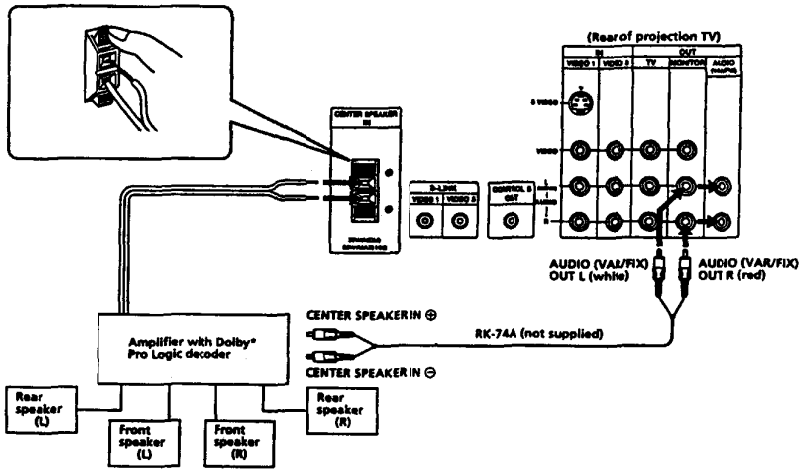
- Do not change the input signal while editing through MONITOR OUT, or the output signal will also change.
- You can use the S video jack to connect a VCR for playback and the composite video connector to connect a VCR for recording.
- When connecting a single VCR to the projection TV, do not connect the MONITOR OUT to the VCR's line input, while at the same time connecting from the projection TV's VIDEO IN connectors to the VCR's line output, as shown below.



Connecting an amplifier with Dolby Pro Logic decoder

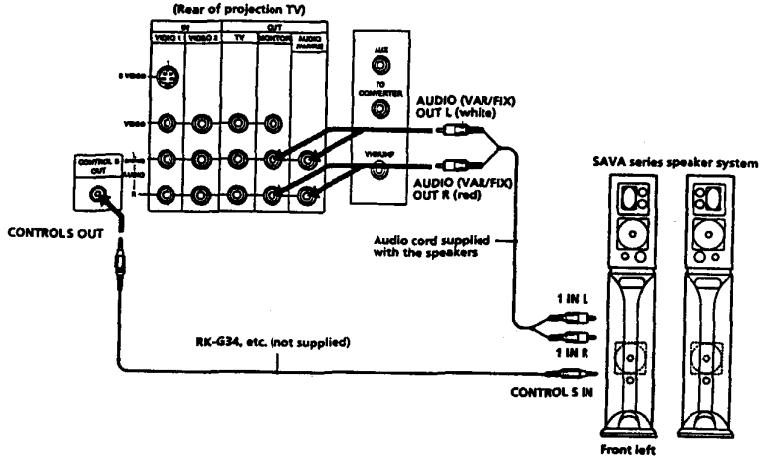
If you use an amplifier with Dolby Pro Logic decoder instead of the projection TV's audio system, you can still use the projection TV's center speaker. See "Setting the speaker switch (SPEAKER)" on page 31.

* Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under Canadian patent number 1,037,877. "Dolby," the double-D symbol ⧈ and "Pro Logic" are trademarks of Dolby Laboratories Licensing Corporation.



Connecting a Sony SAVA series speaker system

If you have a Sony SAVA series speaker system, connect your speakers to the AUDIO (VAR/FIX) OUT jacks (or MONITOR OUT jacks) on the rear of the projection TV with the audio cable supplied with the speakers. You can take advantage of the speakers' Dolby Pro Logic surround system and super woofer mode, and control them with the supplied remote control. When connecting a Sony SAVA series speaker system, see page 31 for more information



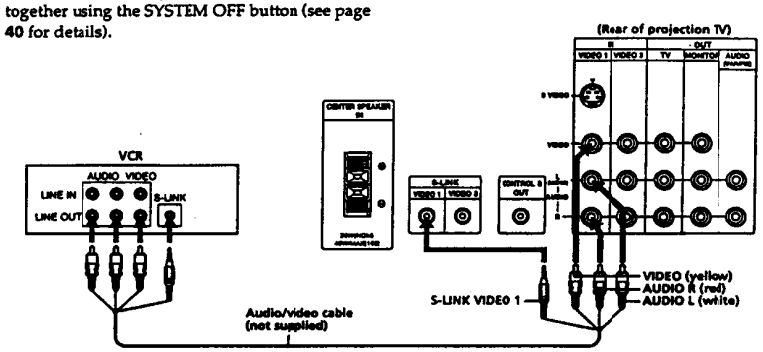
Using the S-Link function with S-Link capable Sony VCRs

The S-Link feature allows you to operate the projection TV and VCR with the S-Link function in the following ways:

- When you press the VCR's play button, the projection TV's input mode is automatically changed to video input which is connected, and the VCR starts playing a tape.
- You can turn off the projection TV and VCR together using the SYSTEM OFF button (see page 40 for details).

Notes

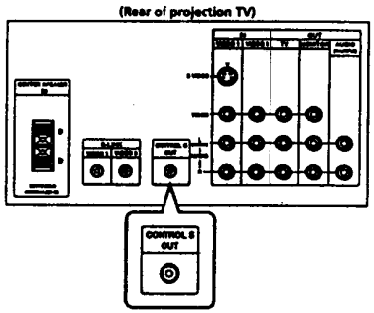
- The projection TV may malfunction if you connect the S-Link cable to the projection TV without connecting the other end of the cable to the VCR.
- When making the S-Link connection, be sure to insert all the connectors firmly.



Connecting other Sony equipment with CONTROL S jack

This feature allows you to control your projection TV and other Sony equipment with one remote control.

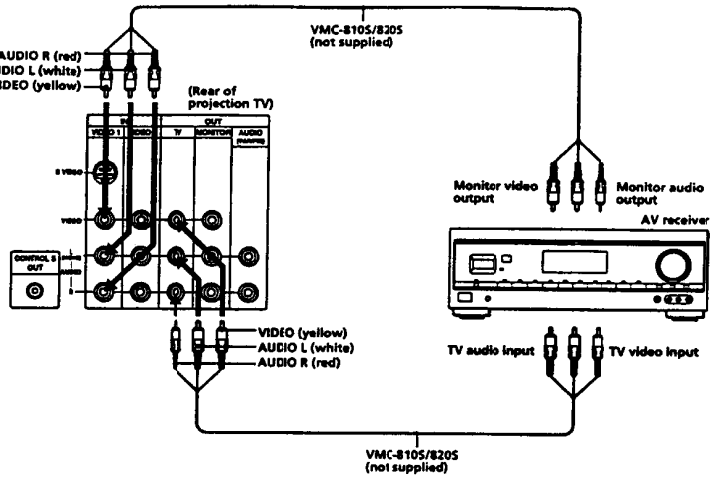
To control other Sony equipment with the projection TV's remote control, connect the input of the equipment to CONTROL S OUT jack on the projection TV.



Connecting an AV receiver

Connect an optional AV receiver to the VIDEO 1 IN jacks at the rear of the projecton TV.

If your AV receiver has the TV input jacks, connect them to the TV OUT jacks at the rear of the projection TV.



Step 3: Setting up the remote control

Inserting batteries

Insert two size AA (R6) batteries (supplied) by matching the + and – on the battery to the diagram inside the battery compartment.

Notes

- Under normal conditions, batteries will last up to six months. If the remote control does not operate properly or the indicators of the buttons on the remote control do not light up, the batteries may be worn out. When replacing batteries, replace both of them with new ones.
- Do not mix old batteries with new ones or mix different types of batteries together.
- If the electrolyte inside the battery should leak, wipe the contaminated area of the battery compartment with a cloth and replace the old batteries with new ones. To prevent the electrolyte from leaking, remove the batteries when you don't plan to use the remote control for a long period of time.
- Do not handle the remote control roughly. Do not drop it, step on it, or let it get wet.
- Do not place the remote control in direct sunlight, near a heater, or where the humidity is high.

Getting to know buttons on the remote control

Names of buttons on the remote control are indicated in different colors to represent the available functions.

Button color

Transparent (light up) ..... TV/VCR/DBS/Cable box function buttons. Press the appropriate function button first to change the remote control's function.

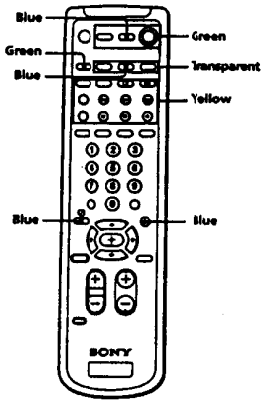
Green ..... Buttons relevant to power operations.

Label color

White ..... TV/VCR/DBS/Cable box operation buttons.

Yellow ..... PIP operation buttons.

Blue ..... DBS operation buttons.

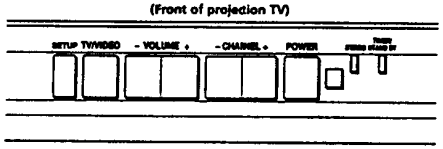


Step 4: Setting up the projection TV automatically

(AUTO SET UP)

You can set up your projection TV easily by using the AUTO SET UP feature. It presets all the receivable channels, adjusts the convergence and changes the on-screen menu language. To set up the projection TV manually, see "Adjusting convergence" (page 19), "Setting cable TV on or off" (page 20), "Presetting channels" (page 21) and "Changing the menu language" (page 21).

If the projection TV is set to a video input, you cannot perform AUTO SET UP. Press TV/VIDEO so that a channel number appears.

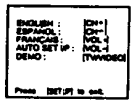


Before you start using AUTO SET UP, be sure to connect the antenna or cable to the projection TV (see page 6).

1 Press POWER to turn the projection TV on.

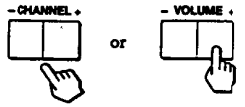
2 Press SETUP on the front of the projection TV.

AUTO SET UP screen appears.



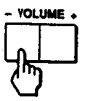
3 Press CHANNEL +/– or VOLUME + to select the on-screen menu language.

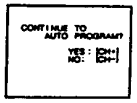
If you prefer Spanish or French to English, you can change the on-screen menu language.



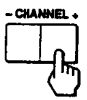
All of the menus will be set to the factory preset condition in the selected language.

4 Press VOLUME – to start AUTO SET UP.

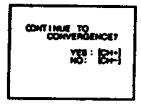




5 Press CHANNEL + to preset channels.



"AUTO PROGRAM" appears on the screen and the TV starts scanning and presetting channels automatically. When all the receivable channels are stored, "AUTO PROGRAM" disappears and the following menu appears. If the projection TV receives cable TV channels, CABLE is set to ON automatically.



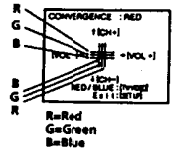
To exit AUTO PROGRAM

Press any button.

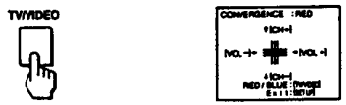
6 Adjust convergence.

(1) Press CHANNEL +.

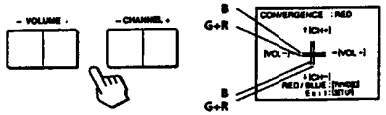
The CONVERGENCE adjustment screen appears.



(2) Press TV/VIDEO to select RED or BLUE.

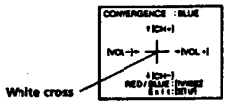


(3) Using CHANNEL +/– or VOLUME +/–, move the line until it converges with the center green line.



To move horizontal line up/down, press CHANNEL +/–.
To move vertical line right/left, press VOLUME +/–.

(4) Repeat steps (2) and (3) to adjust the other lines until all three lines converge and are seen as a white cross.



Note

- Using the AUX connector, press TV (black button) first and make sure that "AUX" is displayed beside the channel number on the screen. Then follow the steps 2 to 6 above to perform AUTO SET UP.

To preview the main functions (DEMO)

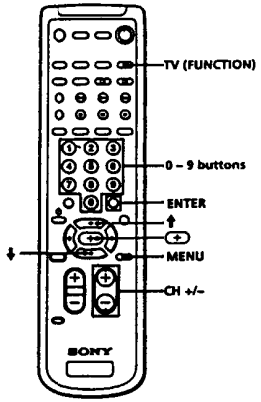
Press TV/VIDEO on the projection TV in step 4. The functions and menus are displayed one by one.

To exit DEMO

Press any button.

Erasing or adding channels

After AUTO SET UP, you can erase unnecessary channels or add the channels you want. Preset channels during the day rather than late at night, when some channels may not be broadcasting.



1 Press TV (FUNCTION).

2 Press MENU.

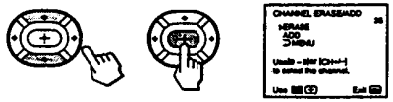
The main menu appears.

3 Press ↑ or ↓ to select 🖴, and press ⊕.

The SET UP menu appears.

4 Press ↑ or ↓ to select CHANNEL ERASE/ADD, and press ⊕.

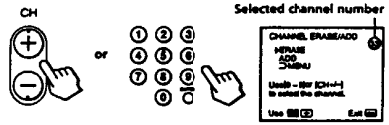
The CHANNEL ERASE/ADD menu appears.



5 Erase and/or add channels:

To erase an unwanted channel

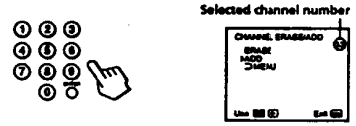
(1) Make sure the cursor (▶) is beside ERASE.
(2) Press CH +/– or the 0 - 9 buttons to select the channel you want to erase, and press ENTER.



(3) Press ⊕.
The "–" indication appears beside the channel number, showing that the channel is erased from the preset memory.

To add a channel that you want

(1) Press ↑ or ↓ to move the cursor (▶) to ADD.
(2) Press the 0 – 9 buttons to select the channel you want to add, and press ENTER.



(3) Press ⊕.
The "+" indication appears beside the channel number, showing that the channel is added to the preset memory.

6 To erase and/or add other channels, repeat step 5.

7 Press MENU to return to the original screen.

Notes

- If you erase or add a VHF or UHF channel, the cable TV channel with the same number is also erased or added, and vice versa.
- Erasing and adding channels is also available for the AUX input.

Adjusting convergence (CONVERGENCE)

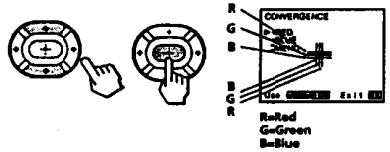
The projection tube image appears on the screen in three layers (red, green and blue). If they do not converge, the color is poor and the picture blurs. To correct this, adjust convergence.
You do not have to do this procedure if you perform AUTO SET UP (page 17). Do this procedure only when you want to adjust it manually.

1 Press MENU.

2 Press ↑ or ↓ to select 🖴, and press ⊕.

3 Press ↑ or ↓ to select CONVERGENCE, and press ⊕.

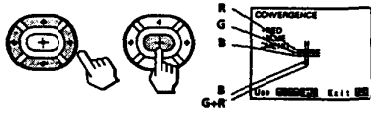
The CONVERGENCE adjustment screen appears.



4 Press ↑, ←, ↓, or → to move the cursor (▶) to the symbol showing the line you want to adjust, and press ⊕.

+RED : Red vertical and horizontal line (left/right/up/down adjustment)
+BLUE : Blue vertical and horizontal line (left/right/up/down adjustment)

5 Press ↑, ←, ↓, or → to move the line until it converges with the center green line, and press ⊕.



To move	Press
Up	↑
Down	↓
Right	→
Left	←

6 Repeat steps 4 and 5 to adjust the other lines until all three lines converge and are seen as a white cross.

7 Press MENU to return to the original screen.

Setting cable TV on or off

If you have connected the projection TV to a cable TV system, set CABLE to ON (the factory setting). If not, set CABLE to OFF.
You do not have to do this procedure if you perform AUTO SET UP (page 17). Do this procedure only when you want to set it manually.

1 Press MENU.

2 Press ↑ or ↓ to select 🖴, and press ⊕.

3 Set CABLE to ON or OFF:
(1) Press ↑ or ↓ to move the cursor (▶) to CABLE, and press ⊕.
(2) Press ↑ or ↓ to select ON or OFF, and press ⊕.

4 Press MENU to return to the original screen.

Note
- If CABLE appears in gray, the projection TV is set to a video input and you cannot select CABLE. Press TV (black button) so that a channel number appears.

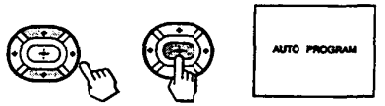
Presetting channels

You can preset TV channels easily by using the AUTO PROGRAM feature.
You do not have to do this procedure if you perform AUTO SET UP (page 17). Do this procedure only when you want to set it manually.

1 Press MENU.

2 Press ↑ or ↓ to select 🖴, and press ⊕.

3 Press ↑ or ↓ to select AUTO PROGRAM, and press ⊕.



"AUTO PROGRAM" appears on the screen and the projection TV starts scanning and presetting channels automatically. When all the receivable channels are stored, "AUTO PROGRAM" disappears and the lowest numbered channel is displayed.

4 Press MENU to return to the original screen.

To exit AUTO PROGRAM
Press any button.

Notes
- If the AUTO PROGRAM menu appears in gray, the projection TV is set to a video input and you cannot select AUTO PROGRAM. Press TV (black button) so that a channel number appears.
- Presetting channels is also available for the AUX input.

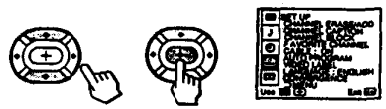
Changing the menu language

If you prefer Spanish or French to English, you can change the menu language.
You do not have to do this procedure if you select the language during AUTO SET UP (page 17).
Do this procedure only when you want to set it manually.

1 Press MENU.

2 Press ↑ or ↓ to select 🖴, and press ⊕.

3 Press ↑ or ↓ to select LANGUAGE, and press ⊕.

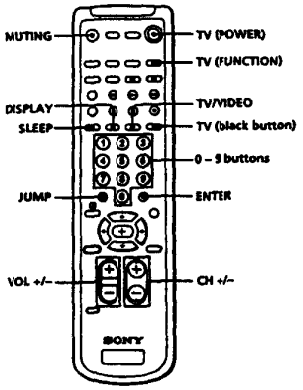


4 Press ↑ or ↓ to select your favorite language, "ENGLISH", "ESPAÑOL," or "FRANÇAIS" and press ⊕.

5 Press MENU to return to the original screen.

Note
- Certain parts of the Spanish or French menus remain in English.

Watching the TV



1 Press TV (POWER) to turn on the projection TV.
The TIMER/STANDBY indicator flashes until the picture appears.

If "VIDEO" appears on the screen, press TV (black button) so that a channel number appears.

2 Press TV (FUNCTION).

Once you press TV (FUNCTION), the projection TV function is set unless another function button is pressed.

3 Select the channel you want:
To select a channel directly
Press the 0 – 9 buttons, and press ENTER.
For example, to select channel 10, press 1, 0 and ENTER.

To scan through channels
Press CH +/– until the channel you want appears.

The channel can also be selected without pressing ENTER.

4 Press VOL +/– to adjust the volume.

Switching quickly between two channels

You can use the JUMP button to switch or "jump" back and forth between two channels.

Press JUMP.

Pressing JUMP again switches the channel back to the one you selected last.

Note
- You cannot jump to channels you scanned through using the CH +/– buttons.

Muting the sound

Press MUTING.
"MUTING" appears on the screen.

To restore the sound, press MUTING again, or press VOL +.

Displaying on-screen information

Press DISPLAY repeatedly until the desired display appears.
Each time you press DISPLAY, the display changes as follows:

Status display* → XDS ON** → CC 1 ON*** → DISPLAY OFF →

- Channel number, the current time, channel caption (if set), and MTS mode (if SAP is selected) are displayed. SAP indication disappears after three seconds.
- ** Some programs are broadcast with XDS (Extended Data Service) which shows a network name, program name, program type, program length, call letters, and time of the show. When you select XDS with the DISPLAY button, this information will be displayed on the screen if the broadcaster offers this service.
- *** Some programs are broadcast with Caption Vision. When you select Caption Vision with the DISPLAY button, Caption Vision will be displayed on the screen if the broadcaster offers this service. (See page 38 for selecting Caption Vision.)

To cancel the display, press DISPLAY repeatedly until "DISPLAY OFF" appears. "DISPLAY OFF" goes off after three seconds.

Setting the Sleep Timer

The projection TV stays on for the length of time you specify and then shuts off automatically.

Press SLEEP repeatedly until the time (minutes) you want appears.
Each time you press SLEEP, the time changes as follows:
30 → 60 → 90 → SLEEP OFF

To cancel the Sleep Timer, press SLEEP repeatedly until "SLEEP OFF" appears, or turn off the projection TV.

Watching a video input picture

Press TV/VIDEO repeatedly until the desired video input appears.
Each time you press TV/VIDEO, the display changes as follows:

TV → VIDEO 1 → VIDEO 2 → VIDEO 3

To return to the TV picture, press TV (black button) so that a channel number appears.

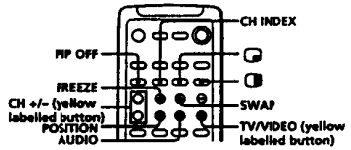
Changing the VHF/UHF input to the AUX input

Press TV (black button).
"AUX" appears beside the channel number.

Pressing TV (black button) again switches back to the VHF/UHF input.

Watching two programs at one time — PIP/P&P (Twin View™)/CH INDEX

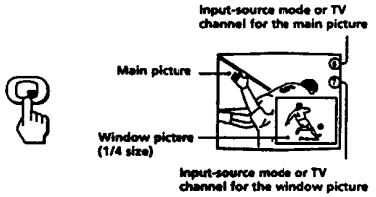
You can watch both the main/right picture and a window/left picture simultaneously using the Picture-in-Picture (PIP) or the Picture-and-Picture (Twin View™) feature.



Use the yellow labelled buttons for PIP operations.

Displaying a window picture (PIP)

Press ▣.

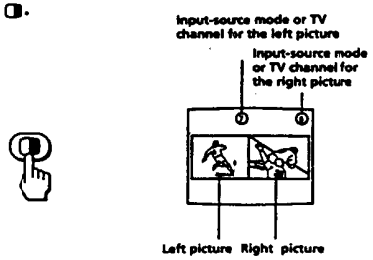

Input-source mode or TV channel for the main picture
Main picture
Window picture (1/4 size)
Input-source mode or TV channel for the window picture

Press ▣ repeatedly to display a smaller window picture.
Each time you press ▣, the size of the window picture changes as follows: 1/4 size → 1/9 size → 1/16 size.

To remove the window picture, press PIP OFF.

Displaying a left picture (P&P)

Press ◨.


Input-source mode or TV channel for the left picture
Input-source mode or TV channel for the right picture
Left picture
Right picture

To restore the normal picture, press PIP OFF.

Notes
- If the main/right picture is not receiving an image, the window/left picture may become a noisy picture.
- The window/left picture sound is also output from the AUDIO (VAR/FIX) OUT jacks when you listen to it.

Changing the window/left picture input mode

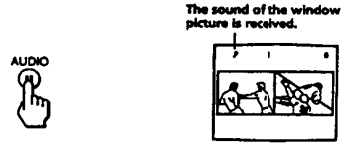
Press TV/VIDEO (yellow labelled button) in PIP or P&P mode to select the input mode.
Each time you press TV/VIDEO (yellow labelled button), "TV," "VIDEO 1," "VIDEO 2," and "VIDEO 3" appear in sequence.

A window/left picture will appear in the same input mode as the last time you used PIP.

Note
- If you connect your VCR without a cable box, your PIP input source is a VCR. If you connect your VCR with a cable box, your PIP input source is a VCR or cable box

Listening to the sound of the window/left picture

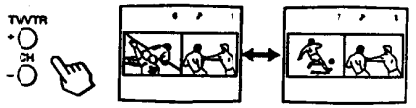
Press AUDIO in PIP or P&P mode.
The ♪ display appears above the window/left picture for a few seconds, indicating that the window/left picture sound is being received.



To restore the main picture sound, press AUDIO again. The ♪ display moves to the main picture channel number.

Changing TV channels in the window/left picture

Press CH +/– (yellow labelled button) in PIP or P&P mode.

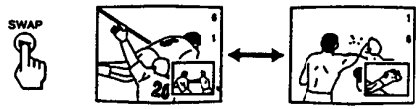


Changing the position of the window picture

Press POSITION in PIP mode.
Each time you press POSITION, the window picture will move counterclockwise on the screen.

Swapping the main/right and window/left pictures

Press SWAP in PIP or P&P mode.
Each time you press SWAP, the images and sound from the main/right and window/left pictures switch places with another.



Note
- The channels being received through the AUX connector cannot be displayed as a window picture.

Watching multiple TV channels at one time (CH INDEX)

You can display all the preset channels in sequence.

1 Press CH INDEX.
The main picture is displayed in the center with a pink frame and 12 window pictures are displayed around the main picture.

Each time you press the CH IDEX button, the 12 window pictures will rotate and a new picture will appear.

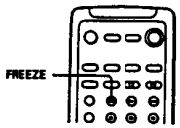
2 Press ↑, ←, ↓ or → to move the pink frame to the channel you want to watch, and press ⊕.
The selected channel appears on the screen.

To display eight favorite channels, press ⊕.

To return to the normal picture, press PIP OFF.

Freezing the picture (FREEZE)

The FREEZE feature is useful when you want to write down an information such as a recipe from a cooking program, a displayed address, or a phone number.



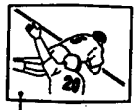
Press FREEZE.

The frozen picture differs depending on the current display mode.

Normal mode

The current picture freezes.

PIP mode



The main picture freezes and the window picture disappears.

P&P mode

Both pictures freeze.

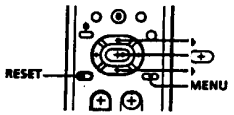
CH INDEX mode

Only the main picture freezes.

To cancel the frozen picture, press FREEZE again.

Adjusting the picture (VIDEO)

When watching TV programs, you can adjust the picture to suit your taste.
You can adjust the picture of video input(s) as well.



1 Press MENU.

2 Press ↑ or ↓ to select ▣, and press ⊕.

3 Select the item you want to adjust.
For example:
(1) To adjust the brightness, press ↑ or ↓ to move the cursor (▶) to BRIGHTNESS.

(2) Press ⊕.

4 Adjust the selected item:
(1) Press ↑, ←, ↓, or → to adjust the item.

(2) Press ⊕.
The new setting appears in the VIDEO menu.

For details on each item, see "Description of adjustable items" below.

5 To adjust other items, repeat steps 3 and 4.

6 Press MENU to return to the original screen.

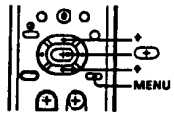
Description of adjustable items

Item	Press → or ↓ to	Press ← or ↑ to
PICTURE	Decrease picture contrast and give soft color.	Increase picture contrast and give vivid color.
HUE	Make picture tones become purplish.	Make picture tones become greenish.
COLOR	Decrease color intensity.	Increase color intensity.
BRIGHTNESS	Darken the picture.	Brighten the picture.
SHARPNESS	Soften the picture.	Sharpen the picture.

To restore the factory settings
Press RESET after displaying and selecting the VIDEO menu.
All of the settings are restored to the factory settings.

Adjusting the color temperature (TRINITONE)

The TRINITONE feature controls the color temperature, permitting white balance preference adjustment without affecting skin tones.



1 Press MENU.

2 Press ↑ or ↓ to select ▣ and press ⊕.

3 Press ↑ or ↓ to select TRINITONE and press ⊕.

4 Press ↑ or ↓ to select NTSC STD, MEDIUM, or HIGH and press ⊕.

Choose	To
HIGH	a cool (bluish) white.
MEDIUM	a neutral white.
NTSC STD	a warm (reddish) white.

Selecting the video mode (VIDEO)

The video mode feature allows you to choose three different modes of picture settings. Choose the one that best suits the type of program that you want to watch.

1 Press MENU.

2 Press ↑ or ↓ to select ▣, and press ⊕.

3 Press ↑ or ↓ to select MODE, and press ⊕.

4 Press ↑ or ↓ to select STANDARD, MOVIE, or SPORTS mode, and press ⊕.

Choose	To
STANDARD	Receive a standard picture.
MOVIE	Receive a finely detailed picture.
SPORTS	Receive a vivid, bright picture.

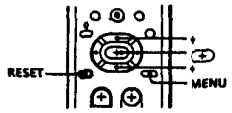
5 Press MENU to return to the original screen.

Note

- The settings for these modes can be adjusted in the VIDEO menu.

Adjusting the sound (AUDIO)

You can adjust the quality of the TV sound to suit your taste. You can adjust the sound of the video input(s) as well.

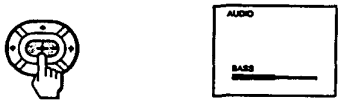


1 Press MENU.

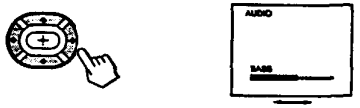
2 Press ↑ or ↓ to select ♪, and press ⊕.

3 Select the item you want to adjust.
For example:
(1) To adjust bass, press ↑ or ↓ to move the cursor (▶) to BASS.

(2) Press ⊕.



4 Adjust the selected item:
(1) Press ↑, ←, ↓, or → to adjust the item.



(2) Press ⊕.
The new setting appears in the AUDIO menu.

For details on each item, see "Description of adjustable items" below.

5 To adjust other items, repeat steps 3 and 4.

6 Press MENU to return to the original screen.

Description of adjustable items

Item	Press ↑ or ← to	Press ↓ or → to
TREBLE	Decrease the treble response.	Increase the treble response.
BASS	Decrease the bass response.	Increase the bass response.
BALANCE	Emphasize the left speaker's volume.	Emphasize the right speaker's volume.

To restore the factory settings

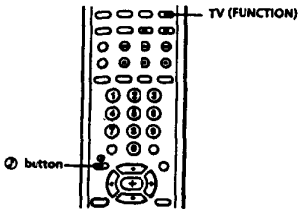
Press RESET after displaying and selecting the AUDIO menu.
All of the settings are restored to the factory settings.

Note

- When SPEAKER (page 31) is OFF and AUDIO OUT (page 32) is in the FIXED condition, the volume, TREBLE, BASS, and BALANCE cannot be adjusted.

Using audio effect (EFFECT)

Using the ⓩ (audio effect) button



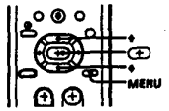
1 Press TV (FUNCTION).

2 Press ⓩ.
Each time you press the ⓩ button, the display changes as follows:

SRS → SIMULATED → EFFECT OFF

Choose	To
SRS	When the program's audio signal is stereo or encoded, SRS expands the material and embraces you with dynamic three-dimensional sound.
SIMULATED	Recieve monaural sound with a surrond-like effect.
EFFECT OFF	Cancel audio effect.

Using the menu to set audio effect



1 Press MENU.

2 Press ↑ or ↓ to select ♪, and press ⊕.

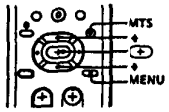
3 Press ↑ or ↓ to select EFFECT, and press ⊕.

4 Press ↑ or ↓ to select SRS, SIMULATED or OFF, and press ⊕.

5 Press MENU to return to the original screen.

Selecting stereo or bilingual programs (MTS)

The Multichannel TV Sound (MTS) feature allows you to enjoy stereo sound or Second Audio Programs (SAP) of your choice. The initial setting is stereo sound (STEREO).



Press MTS repeatedly to select STEREO, SAP, or MONO.

STEREO→SAP→MONO

Choose	To
STEREO	Listen to stereo sound. The STEREO indicator on the projection TV lights up when a stereo broadcast is received.
SAP	Listen to bilingual programs. There is no sound when the SAP signal is not broadcasting.
MONO	Listen to monaural sound. Reduce noise during stereo broadcasts.

Note

- Stereo and SAP sounds are subject to program sources.

To set MTS using the menu

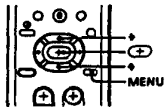
1 Press MENU.
2 Press ↑ or ↓ to select ♪, and press ⊕.
3 Press ↑ or ↓ to select MTS, and press ⊕.
4 Press ↑ or ↓ to select STEREO, SAP, or MONO.
5 Press MENU to return to the original screen.

Setting the speaker switch (SPEAKER)

You may switch off the projection TV speakers when, for example, you want to listen to the sound through a stereo system.

If you connect an amplifier with Dolby Pro Logic decoder to the CENTER SPEAKER IN terminals, you can use the projection TV speakers as center speaker. After making the connection (page 12), set SPEAKER to CENTER.

If you connect the Sony SAVA series speaker system to the AUDIO (VAR/FIX) OUT connectors, you can take advantage of the speakers' surround sound and super woofer mode. After making the connections (page 13), set SPEAKER to SAVA SP, then adjust SURROUND MODE or SUPER WOOFER MODE.



1 Press MENU.

2 Press ↑ or ↓ to select ♪, and press ⊕.

3 Press ↑ or ↓ to select SPEAKER, and press ⊕.

4 Press ↑ or ↓ to select ON, OFF, CENTER or SAVA SP, and press ⊕.

5 Press MENU to return to the original screen.

Choose	To
ON	Listen to the sound from the projection TV.
OFF	Turn off the projection TV speaker sound and listen to the projection TV's sound solely through the audio system speakers.
CENTER	Use the projection TV center speakers as the center speaker in another surround audio system.
SAVA SP	Turn off the projection TV speaker sound and listen to the projection TV's sound through the Sony SAVA series speaker system. You can adjust volume, muting, surround modes, and super woofer mode with the remote control supplied with the projection TV.

To select surround sound or super woofer mode of the SAVA speaker system

After setting SPEAKER to SAVA SP, follow the procedure below.

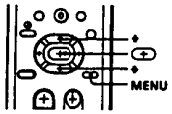
Press ↑ or ↓ to select SURROUND MODE or SUPER WOOFER MODE, and press ⊕.
For details on each option, refer to the operating instructions of the speaker system.

Note

- This feature is only for Sony SAVA speaker system with an operation capability for KP-48V45, KP-53V45, and KP-61V45.

Setting audio out (AUDIO OUT)

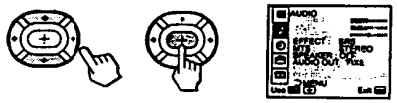
You can change AUDIO OUT to VARIABLE or FIXED when SPEAKER is set to OFF.
AUDIO OUT is variable when SPEAKER is set to ON.



1 Press MENU.

2 Press ↑ or ↓ to select ♪, and press ⊕.

3 Press ↑ or ↓ to select AUDIO OUT, and press ⊕.



4 Press ↑ or ↓ to select VARIABLE or FIXED, and press ⊕.

VARIABLE: Sound output varied according to the projection TV settings. You can adjust the volume, bass, treble, and balance.
FIXED: Sound output is always fixed to a certain level. The volume, bass, treble, and balance are also fixed to the factory settings.

5 Press MENU to return to the original screen.

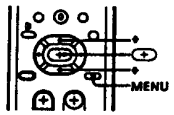
Note
- If AUDIO OUT appears in gray, set SPEAKER to OFF.

Setting daylight saving time (DAYLIGHT SAVING)

If your area uses daylight saving time, change DAYLIGHT SAVING setting depending on the season, before setting the current time.

Daylight saving start
- After the first Sunday in April, set DAYLIGHT SAVING to YES. Current time setting (right column) automatically moves one hour ahead.

Daylight saving end
- After the last Sunday in October, set DAYLIGHT SAVING to NO. Current time setting automatically moves one hour back.



1 Press MENU.

2 Press ↑ or ↓ to select ◴, and press ⊕.

3 Press ↑ or ↓ to select DAYLIGHT SAVING, and press ⊕.

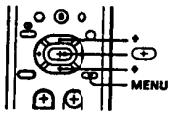
4 Press ↑ or ↓ to select YES or NO, and press ⊕.

Choose	To
YES	Set for daylight saving start.
NO	Set for daylight saving end.

5 Press MENU to return to the original screen.

Setting the clock (CURRENT TIME SET)

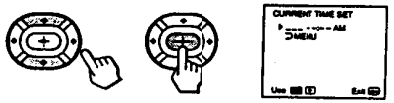
Setting the clock enables you to turn the projection TV on and off with the timer. Make sure to set daylight saving time first.



1 Press MENU.

2 Press ↑ or ↓ to select ◴, and press ⊕.

3 Press ↑ or ↓ to select CURRENT TIME SET, and press ⊕.



4 Make sure the cursor (▷) is to the left of "–:– AM," and press ⊕.

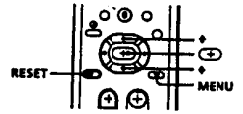
5 Set the current day of the week and time.
(1) Press ↑ or ↓ to set the day of the week, and press ⊕.

(2) Set the hour and minutes in the same way as in step (1). When you press ⊕ after setting the minutes, the clock starts.

6 Press MENU to return to the original screen.

Setting the timer to turn the projection TV on and off (ON/OFF TIMER)

You can set the projection TV to turn on and off at the times you specify. Make sure the clock is set correctly. If it is not, set the clock first (left column).



1 Press MENU.

2 Press ↑ or ↓ to select ◴, and press ⊕.

3 Press ↑ or ↓ to select ON/OFF TIMER, and press ⊕.

4 Press ⊕ and enter the ON/OFF TIMER setting.
(1) Press ↑ or ↓ to set the day(s), and press ⊕.

Each time you press ↑ or ↓, the days cycle as follows:
EVERY SUN–SAT→EVERY MON–FRI→ SUNDAY→...→SATURDAY→EVERY SUNDAY→...→EVERY SATURDAY

(continued)

(2) Press ↑ or ↓ to set the time (hour then minutes) that you want to turn on the projection TV, and press ⊕.

(3) Press ↑ or ↓ to set the time duration, and press ⊕.

Each time you press ↑, the time duration increases by one hour up to a maximum of six hours.

(4) Press ↑ or ↓ to select the channel, and press ⊕.

The TIMER indicator on the projection TV lights up.

5 To set the other program, press ⊕, and repeat step 4.

6 Press MENU to return to the original screen.

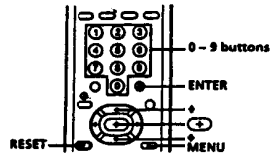
One minute before the projection TV turns off, the message "TV will turn off soon." is displayed on the screen.

To cancel the timer
In step 3 or 4, press RESET.

Note
- If you unplug the projection TV or a power interruption occurs, the ON/OFF TIMER setting will be erased. Reset the current time, then set the timer.

Customizing the channel names (CHANNEL CAPTION)

You can add a caption for up to 12 channels. This feature allows you to easily identify which channel you are watching. You can make your own caption.

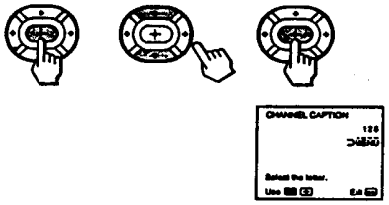


1 Press MENU.

2 Press ↑ or ↓ to select 🧰, and press ⊕.

3 Press ↑ or ↓ to select CHANNEL CAPTION, and press ⊕.

4 Press ⊕ and press ↑ or ↓ to select the channel that you want to caption, and press ⊕.

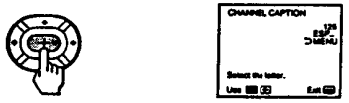


5 Enter the letters (up to four) to caption the channel:
(1) Press ↑ or ↓ to select the first letter.

Each time you press ↑ or ↓, the letter changes as follows:

0...9→A...Z→&./_(blank space)

(2) Press ⊕.



(3) Repeat steps (1) and (2) to select the remaining letters, and press ⊕.

6 Repeat steps 4 and 5 to caption other channels.

7 Press MENU to return to the original screen.

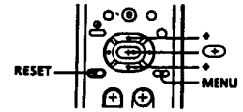
After you customize the channel, the channel caption appears green.

To erase a caption
In step 5, press RESET.

Notes
- If the CHANNEL CAPTION menu appears in gray, the projection TV is set to a video input, and you cannot select CHANNEL CAPTION. Press TV (black button) so that a channel number appears.
- If more than 90 seconds elapse after you press a button, the menu disappears automatically.
- The channel caption feature is not available for the AUX input.

Blocking out a channel (CHANNEL BLOCK)

The channel block feature allows you to prevent children from watching unsuitable programs. You can block out two channels.



1 Press MENU.

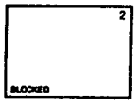
2 Press ↑ or ↓ to select 🧰, and press ⊕.

3 Press ↑ or ↓ to select CHANNEL BLOCK, and press ⊕.

4 Press ↑ or ↓ to select program 1 or 2, and press ⊕.

5 Press ↑ or ↓ to select the channel which you want to block out, and press ⊕.

6 Press MENU to return to the original screen.
When you select the blocked channel, the message "BLOCKED" appears on the screen.



To cancel a CHANNEL BLOCK setting
In step 4 or 5, press RESET.

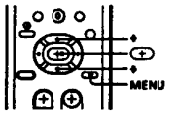
Note
- Once you use CHANNEL BLOCK, Caption Vision and XDS of the blocked channel and the selected channel output from MONITOR OUT are also blocked out.

Setting your favorite channels

(FAVORITE CHANNEL)

The favorite channel feature allows your projection TV to memorize your favorite channels easily.
If you set to AUTO, the last eight channels you selected with the 0 – 9 buttons are automatically set as your favorite channels. If you want to input your own selection of channels, set to MANUAL.

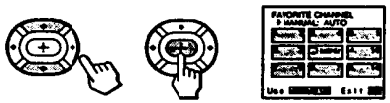
Setting your favorite channels



1 **Press MENU.**

2 **Press ↑ or ↓ to select 🖴, and press ⊕.**

3 **Press ↑ or ↓ to select FAVORITE CHANNEL, and press ⊕.**



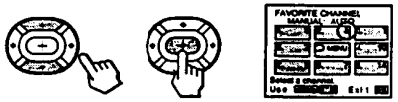
4 **Press ⊕ and press ↑ or → to select AUTO or MANUAL, and press ⊕.**

If you select AUTO, skip steps 5 to 7.
The last eight channels you selected with the 0 – 9 buttons are automatically set as your favorite channels.

If you select MANUAL, the favorite channel numbers become white, indicating that favorite channels can be entered.

5 **Press ↑, ←, ↓ or → to select a favorite channel number, and press ⊕.**

6 **Press ↑ or ↓ to select the channel that you want to set as your favorite channel, and press ⊕.**



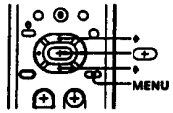
7 **To set the other favorite channels, repeat steps 5 and 6.**

8 **Press MENU to return to the original screen.**

Notes

- If more than 90 seconds elapse after you press another button, the menu disappears automatically.
- The favorite channel feature is not availabe for the AUX input.

Selecting your favorite channel



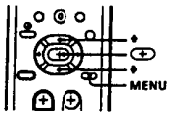
1 **Press ⊕.**
The picture of the current channelis displayed in the center with a pink frame and the eight favorite channels are displayed around it.

2 **Press ↑, ←, ↓ or → to move the pink frame to the channel you want to watch, and press ⊕.**
The selected channel appears on the screen.

Setting video labels

(VIDEO LABEL)

The video label feature allows you to label each input mode so that you can easily identify the connected equipment. For example, you can label VIDEO 1 as VHS.



1 **Press MENU.**

2 **Press ↑ or ↓ to select 🖴, and press ⊕.**

3 **Press ↑ or ↓ to select VIDEO LABEL, and press ⊕.**

4 **Press ↑ or ↓ to select the input mode you want to label, and press ⊕.**

5 **Press ↑ or ↓ to select the label, and press ⊕.**

Each time you press ↑ or ↓, the label changes as follows:

VIDEO 1

VIDEO 1 ⟷ VHS ⟷ 8 mm ⟷ BETA
↕ ↕
DBS ⟷ DVD ⟷ S VIDEO ⟷ LD

VIDEO 2

VIDEO 2 ⟷ VHS ⟷ 8 mm ⟷ BETA
↕ ↕
DBS ⟷ DVD ⟷ S VIDEO ⟷ LD

VIDEO 3

VIDEO 3 ⟷ VHS ⟷ 8 mm ⟷ BETA
↑ ↑
└→ DBS ⟷ DVD ⟷ LD ←┘

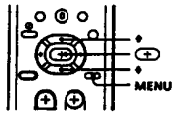
6 **Repeat steps 4 and 5 to label other input modes.**

Note

- If more than 90 seconds elapse before you press another button, the menu disappears automatically.

Setting Caption Vision (CAPTION VISION)

Some programs are broadcast with Caption Vision. To display Caption Vision, select either CC1, CC2, CC3, CC4, TEXT1, TEXT2, TEXT3, or TEXT4 from the menu. CC1, CC2, CC3, or CC4 shows you on-screen version of the dialogue or sound effects of a program. (The mode should be set to CC1 for most programs.) TEXT1, TEXT2, TEXT3, or TEXT4 shows you on-screen information presented using either half or the whole screen. It is not usually related to the program.



1 Press MENU.

2 Press ↑ or ↓ to select CC, and press ⊕.

3 Press ↑ or ↓ to select the caption type, and press ⊕.

4 Press MENU to return to the original screen.

To display Caption Vision
Press DISPLAY. (See page 23 for details.)

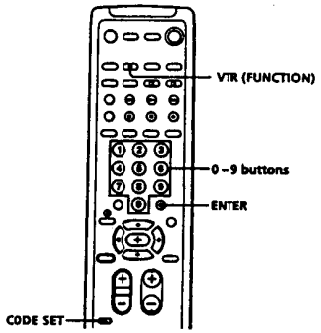
Notes

- Poor reception of TV programs can cause errors in Caption Vision and XDS.
  Captions may appear with a white box or other errors instead of a certain word.
- XDS, Caption Vision, and the status display cannot be used at the same time.
- For details on XDS, see page 23.

Operating video equipment

You can use the supplied remote control to operate Sony or non-Sony video equipment that has an infrared remote sensor. For this operation, set the manufacturer's code number.

Setting the manufacturer's code



Press the CODE SET, VTR (FUNCTION), and 0 – 9 buttons to enter the manufacturer's code number (see the chart on page 39), then press ENTER.
For example, to operate a Sony 8 mm VCR, press CODE SET, VTR (FUNCTION), 3, 0, 2, and ENTER.

VCR manufacturer code numbers

Manufacturer	Code number
Sony	301, 302, 303
Aiwa	338
Audio Dynamic	314, 337
Bell & Howell (M. Wards)	330, 343
Brocsonic	319
Canon	309, 308
Citizen	332
Craig	315, 302, 332
Curtis Mathis	304, 338, 309
Daewoo	341, 312, 309
DEX	314, 336, 337
Dimensia	304
Emerson	319, 320, 316, 317, 318
Fisher	330, 334, 335, 333
Funai	338
General Electric	329, 304, 309
Goldstar	332
Hitachi	306, 304, 305
Instant Replay	309, 308
JC Penny	309, 305, 304, 330, 314, 336, 337
JVC	314, 336, 337
Kenwood	314, 336, 332, 337
LXI (Sears)	332, 305, 333, 334, 330, 335
Magnavox	308, 309
Marantz	314, 336, 337
Marta	332
Memorex	309, 335
Minolta	305, 304
Mitsubishi/MGA	323, 324, 325, 326
Multitech	325, 338, 321
NEC	314, 336, 337
Olympic	309, 308
Panasonic	308, 309, 306, 307
Penax	305, 304
Philco	308, 309
Philips	308, 309
Pioneer	308
Quasar	308, 309
RCA/PROSCAN	304, 305, 308, 309, 311, 312, 313
Realistic	309, 330, 328, 335, 324, 338
Sansui	314
Singer	315
Samsung	322, 313, 321
Sanyo	330, 335
Scott	312, 313, 321, 335, 323, 324, 325, 326
Sharp	327, 328
Shintom	315
Signature 2000 (M. Wards)	338, 327
Sylvania	308, 309, 338
Symphonic	338
Tashiro	312
Tatung	334, 336, 337
Teac	334, 336, 338, 337
Technics	309, 308
Toshiba	312, 311
Wards	327, 328, 335, 331, 332
Yamaha	330, 314, 336, 337
Zenith	331

MDP manufacturer code numbers

Manufacturer	Code number
Sony	701
Kenwood	707
Magnavox	703
Marantz	702
Mitsubishi	702
Panasonic	704
Philips	703
Pioneer	702
RCA	702
Sanyo	706
Sharp	705
Yamaha	703

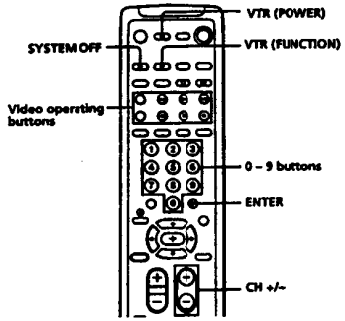
Notes

- If more than one code number is listed, try entering them one by one, until you come to the correct code for your equipment.
- In some rare cases, you may not be able to operate your non-Sony video equipment with the supplied remote control. This is because your equipment may use a code that is not included with this remote control. In this case, please use the equipment's own remote control unit.
- The code numbers for Sony equipment are assigned at the factory as follows:

VHS VCR	301 (preset code for the supplied remote control)
8 mm VCR	302
Beta, ED Beta VCRs	303

- Whenever you remove the batteries — to replace them, for example — if too much time is taken, the code number may revert to the factory setting and must be reset.

Operating video equipment



Use the video operating buttons on the remote control to operate the video equipment. Press VTR (FUNCTION) before operating the video equipment.

Operating a VCR	Buttons on the remote control
To turn on or off	Press VTR (POWER).
To select a channel directly	Press the 0 – 9 buttons.
To change channels	Press CH +/–.
To record	Press ● while pressing ●. First release ●, then release ●.
To play	Press ▶.
To stop	Press ■.
To fast forward	Press ▶▶.
To rewind the tape	Press ◀◀.
To pause	Press II. To resume normal playback, press again.
To search the picture forward or backward	Press ▶▶ or ◀◀ during playback. To resume normal playback, release the button.
To change input mode	Press TV/VTR.

Operating an MDP	Buttons on the remote control
To turn on or off	Press VTR (POWER).
To play	Press ▶.
To stop	Press ■.
To pause	Press II. To resume normal playback, press again.
To search the picture forward or backward	Keep pressing ▶▶ or ◀◀ during playback. To resume normal playback, release the button.
To search the chapter forward and backward	Press CH +/–.

Operating an DVD	Buttons on the remote control
To turn on or off	Press VTR (POWER).
To play	Press ▶.
To stop	Press ■.
To pause	Press II. To resume normal playback, press again.
To serch the picture forward or backward	Keep pressing ▶▶ or ◀◀ during playback. To resume normal playback, release the button.

Note

- If the video equipment does not have a certain function, the corresponding button on this remote contrd will not operate.

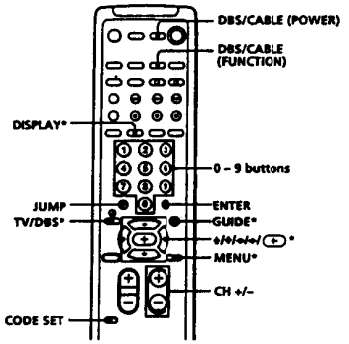
Turning off the system

You can turn off the projection TV and Sony equipment with the S-Link function, such as a VCR, together when you make the S-Link connection (see page 14 for the connection).

Press SYSTEM OFF.

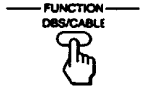
Operating a cable box or DBS receiver

You can program the supplied remote control to operate a cable box or DBS receiver. Follow the procedures below to set the manufacturer's code number in the remote control.

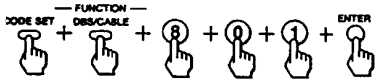


* The TV/DBS, GUIDE, DISPLAY, +/↑/↓/←/→/⊕, and MENU buttons can be used only with a DBS receiver.

1 Turn off the equipment you want to set up, and press DBS/CABLE (FUNCTION).



2 Press the CODE SET, DBS/CABLE (FUNCTION), and 0 – 9 buttons to enter the manufacturer's code number (see the chart on the right column), then press ENTER. For example, to program your remote control to operate a Sony DBS receiver, press CODE SET, DBS/CABLE (FUNCTION), 8, 0, 1, and ENTER.



3 Press DBS/CABLE (POWER) to turn on the cable box or DBS receiver.

4 Use the cable box/DBS control buttons to check if the code number works.
For example, to operate a cable box or DBS receiver, you can use the DBS/CABLE (POWER), JUMP, CH +/–, 0 – 9 and ENTER buttons.

Note

- If the cable box or DBS receiver does not have a certain function, the corresponding button on this remote control will not operate.

To operate the projection TV
Press TV (FUNCTION). Then use the projection TV control buttons to control the projection TV.

For more details on operating the cable box or DBS receiver
Refer to the operating instructions that come with the equipment.

If the remote control doesn't work

- First, try repeating the setup procedures using the other codes listed for your equipment.

Manufacturer code numbers (cable box)

Manufacturer	Code number
Hamlin/Regal	222, 223, 224, 225, 226
Jerrold/G. I.	201, 202, 203, 204, 205, 206, 207, 208, 218
Oak	227, 228, 229
Panasonic	219, 220, 221
Pioneer	214, 215
Scientific Atlanta	209, 210, 211
Tocom	216, 217
Zenith	212, 213

Manufacturer code numbers (DBS receiver)

Manufacturer	Code number
Sony	801 (preset code for the supplied remote control)
RCA	802

Notes

- If more than one code number is listed, try entering them one by one until you come to the correct code for your equipment.
- If you enter a new code number, the code number you previously entered at that setting is erased.
- In some rare cases, your equipment may use a code that is not provided with this remote control and you may not be able to operate your equipment with the supplied remote control. In this case, use the equipment's own remote control unit.
- Whenever you remove the batteries — to replace them, for example — if too much time is taken, the code numbers may revert to the factory setting and must be reset.

Troubleshooting

If the problem persists after trying the methods below, contact your nearest Sony dealer.

No picture (screen not lit), no sound
- ➡ Make sure the power cord is connected securely.
- ➡ Operate with the buttons on the projection TV.
- ➡ Insert the batteries in the remote control with the correct polarity.
- ➡ Replace the batteries with new ones if they are weak.
- ➡ Check to see if the TV/VIDEO setting is correct: when watching TV, set to TV, and when watching video tapes, set to VIDEO1, 2, or 3.
- ➡ Try another channel. It could be station trouble.
- ➡ Perform AUTO SET UP again using the SETUP button to return to the factory preset condition. (page 17)

Poor or no picture (screen lit), good sound
- ➡ Adjust PICTURE in the VIDEO menu. (page 26)
- ➡ Adjust BRIGHTNESS in the VIDEO menu. (page 26)
- ➡ Adjust convergence. (page 19)
- ➡ Check antenna/cable connections. (page 6)
- ➡ Perform AUTO SET UP again using the SETUP button to return to the factory preset condition. (page 17)
- ➡ Remove objects from the front of the projection TV.

Good picture, no sound
- ➡ Press MUTING so that "MUTING" disappears from the screen. (page 22)
- ➡ Check the MTS setting in the AUDIO menu. (page 30)
- ➡ Make sure SPEAKER is set to ON in the AUDIO menu. (page 31)
- ➡ Perform AUTO SET UP again using the SETUP button to return to the factory preset condition. (page 17)

No color
- ➡ Adjust the COLOR in the VIDEO menu. (page 27)
- ➡ Confirm that black and white program is not being broadcast.
- ➡ Perform AUTO SET UP again using the SETUP button to return to the factory preset condition. (page 17)

Only snow and noise appear on the screen
- ➡ Check the CABLE setting in the SET UP menu. (page 20)
- ➡ Check the antenna/cable connections. (page 6)
- ➡ Make sure the channel is broadcasting programs.
- ➡ Press TV (black button) to change the input mode. (page 23)

Dotted lines or stripes
- ➡ Adjust the antenna.
- ➡ Move the projection TV away from noise sources such as cars, neon signs, and hair-dryers.

Double images or ghosts
- ➡ Use a highly directional outdoor antenna or a cable (when the problem is caused by reflections from nearby mountains or tall buildings).

Cannot operate menu
- ➡ If the item you want to choose appears in gray, you cannot select it. Press TV/VIDEO correctly.
- ➡ Check the CABLE setting in the SET UP menu. (page 20)

Cannot receive upper channels (UHF) when using an antenna
- ➡ Make sure CABLE is OFF in the SET UP menu. (page 20)
- ➡ Use AUTO PROGRAM to add receivable channels that are not presently in projection TV memory. (pages 17, 21)

Cannot receive any channels when using cable TV
- ➡ Make sure CABLE is ON in the SET UP menu. (page 20)
- ➡ Use AUTO PROGRAM to add receivable channels that are not presently in projection TV memory. (pages 17, 21)

Remote control does not operate
- ➡ Batteries could be weak. Replace the batteries. (page 16)
- ➡ Make sure the projection TV's power cord is connected securely to the wall outlet.
- ➡ Press TV (FUNCTION) when operating your projection TV.
- ➡ Are fluorescent lights too close to the projection TV? Move them at least 3-4 feet away from the projection TV.

Cannot gain enough volume when using a cable box
- ➡ Increase the volume at the cable box. Then press TV (FUNCTION) and adjust the projection TV's volume.

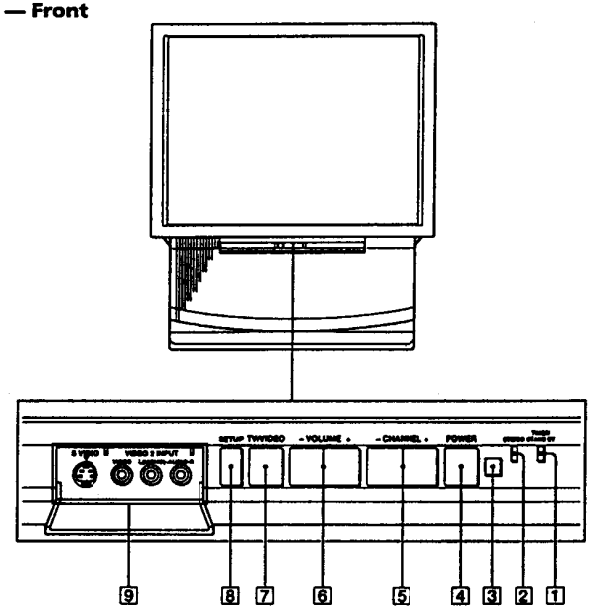
Projection TV malfunctions when using the S-Link function
- ➡ Make sure the projection TV's power cord is connected securely to the wall outlet.
- ➡ Check the S-Link connection. (page 14)

The projection TV needs to be cleaned
- ➡ Clean the projection TV with a soft dry cloth. Never use strong solvents such as thinner or benzine, which might damage the finish of the cabinet.

Index to parts and controls

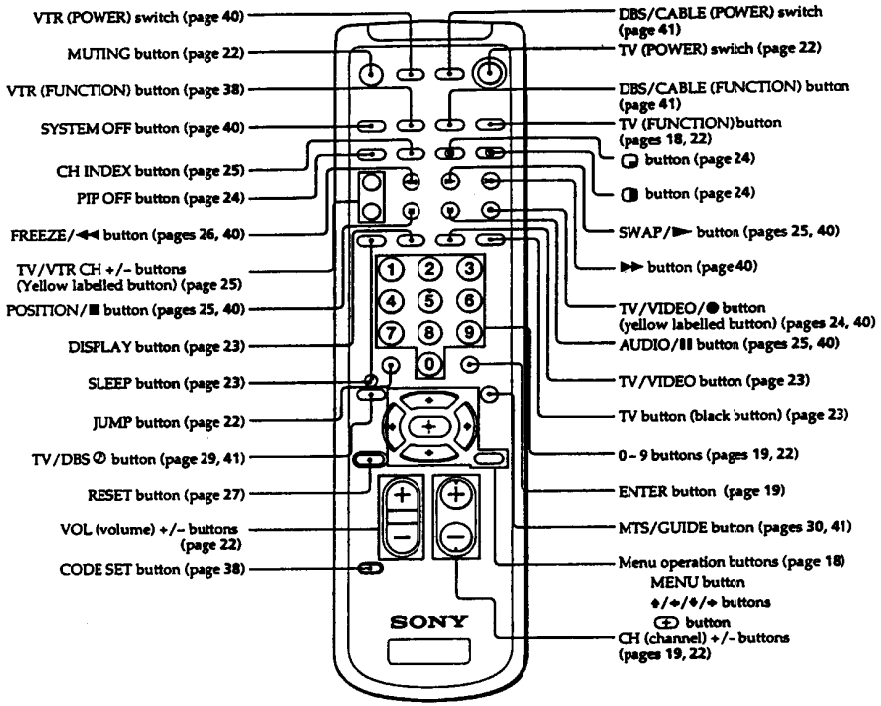
This section briefly describes the buttons and controls on the projection TV and on the remote control. For more information, refer to the pages next to each description.

Projection TV — Front



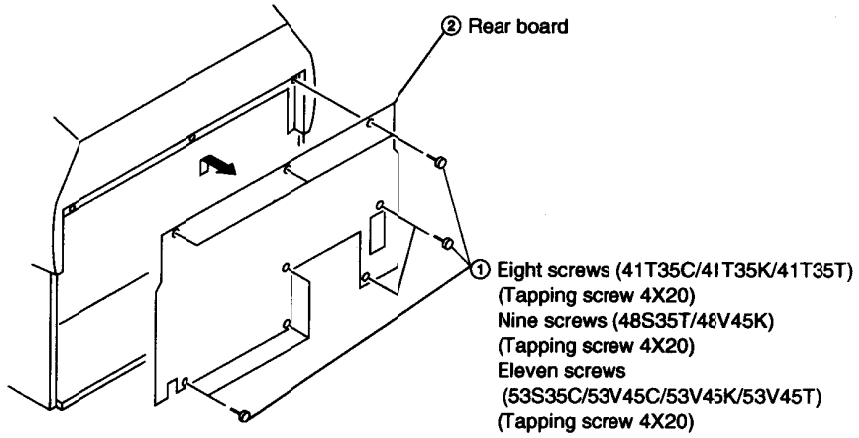
1. TIMER/STANDBY indicator (pages 22, 34)
2. STEREO indicator (page 30)
3. Remote sensor
4. POWER switch (page 17)
5. CHANNEL +/– buttons (page 17)
6. VOLUME +/– buttons (page 17)
7. TV/VIDEO button (page 17, 18)
8. SETUP button (page 17)
9. S VIDEO/VIDEO 2 INPUT (VIDEO/AUDIO L(MONO)/R) jacks (page 10)

Remote control

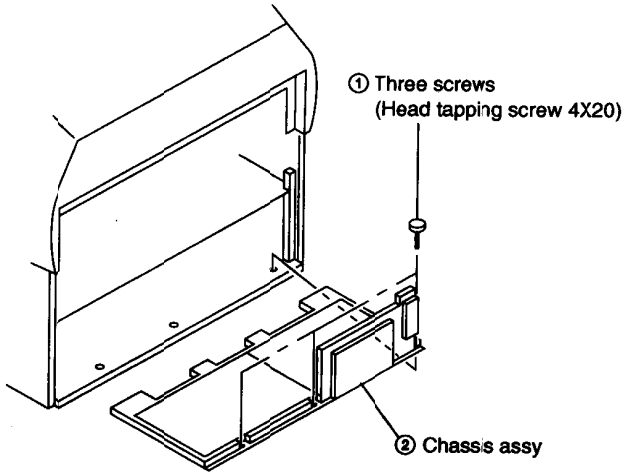

VTR (POWER) switch (page 40)
MUTING button (page 22)
VTR (FUNCTION) button (page 38)
SYSTEM OFF button (page 40)
CH INDEX button (page 25)
PIP OFF button (page 24)
FREEZE/◀◀ button (pages 26, 40)
TV/VTR CH +/– buttons (Yellow labelled button) (page 25)
POSITION/■ button (pages 25, 40)
DISPLAY button (page 23)
SLEEP button (page 23)
JUMP button (page 22)
TV/DBS ⊘ button (page 29, 41)
RESET button (page 27)
VOL (volume) +/– buttons (page 22)
CODE SET button (page 38)
DBS/CABLE (POWER) switch (page 41)
TV (POWER) switch (page 22)
DBS/CABLE (FUNCTION) button (page 41)
TV (FUNCTION) button (pages 18, 22)
button (page 24)
button (page 24)
SWAP/▶ button (pages 25, 40)
▶▶ button (page 40)
TV/VIDEO/● button (yellow labelled button) (pages 24, 40)
AUDIO/II button (pages 25, 40)
TV/VIDEO button (page 23)
TV button (black button) (page 23)
0 – 9 buttons (pages 19, 22)
ENTER button (page 19)
MTS/GUIDE button (pages 30, 41)
Menu operation buttons (page 18)
MENU button
◆/◆/◆/◆ buttons
⊕ button
CH (channel) +/– buttons (pages 19, 22)
SONY

SECTION 2
DISASSEMBLY

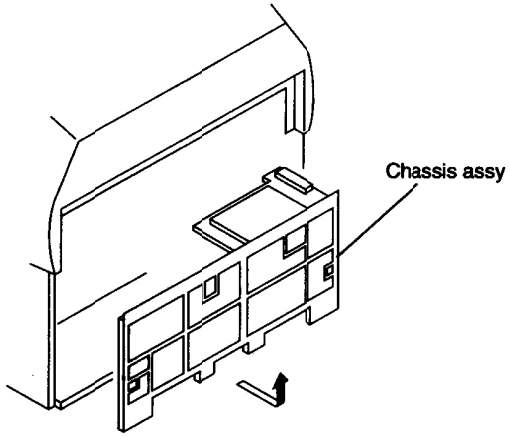
2-1. REAR BOARD REMOVAL



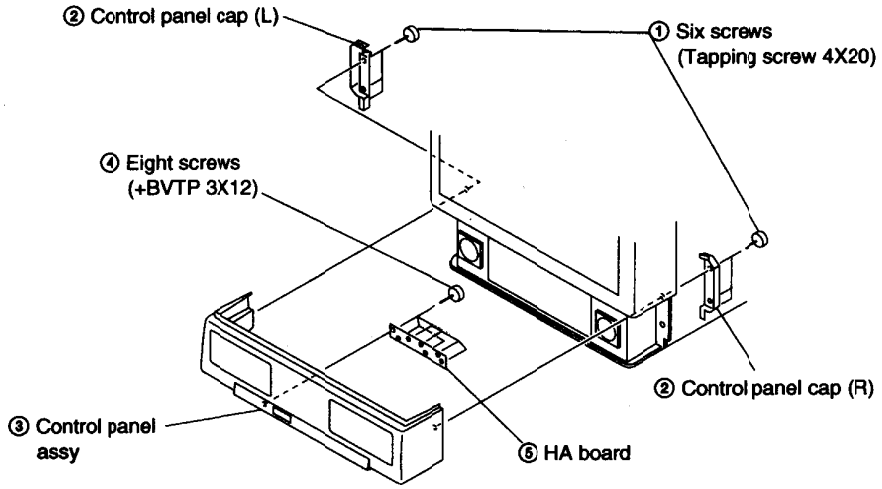
2-2. CHASSIS ASSY REMOVAL



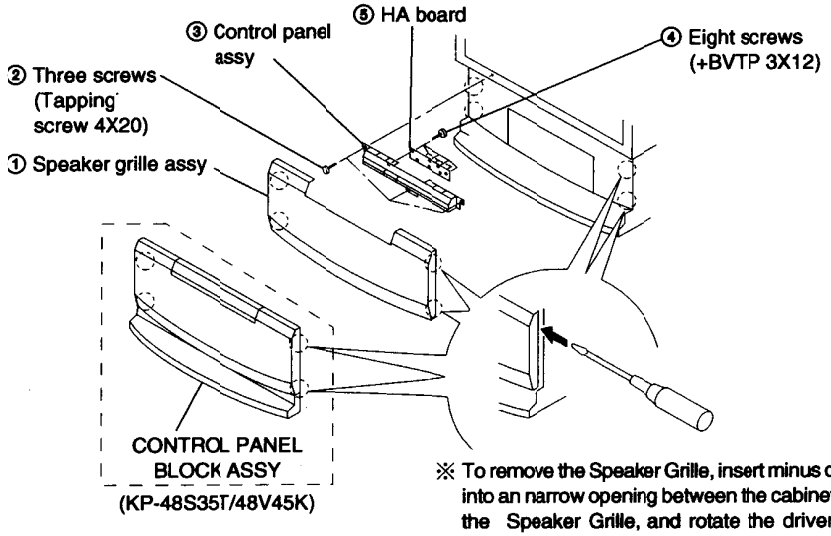
2-3. SERVICE POSITION



2-4-1. HA BOARD REMOVAL (KP-41T35C/41T35K/41T35T)

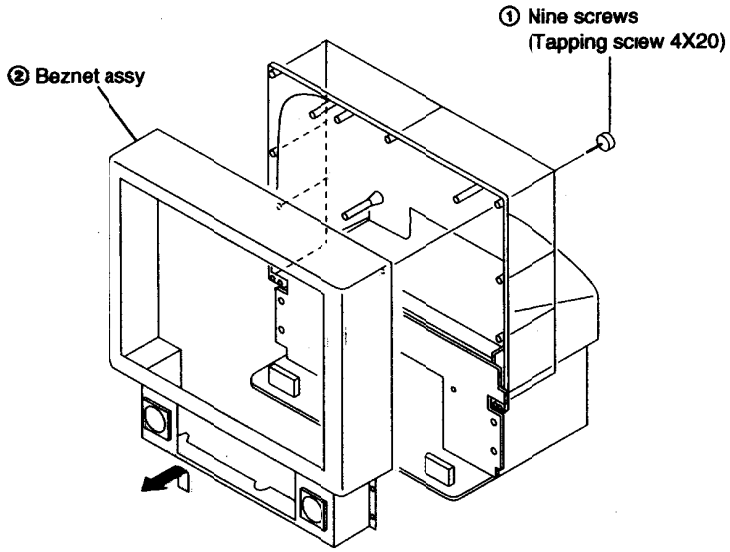

② Control panel cap (L)
① Six screws (Tapping screw 4X20)
④ Eight screws (+BVTP 3X12)
② Control panel cap (R)
③ Control panel assy
⑤ HA board

2-4-2. CONTROL PANEL BLOCK ASSY REMOVAL (KP-48S35T/48V45K) HA BOARD REMOVAL (KP-53S35C/53V45C/53V45K/53V45T)

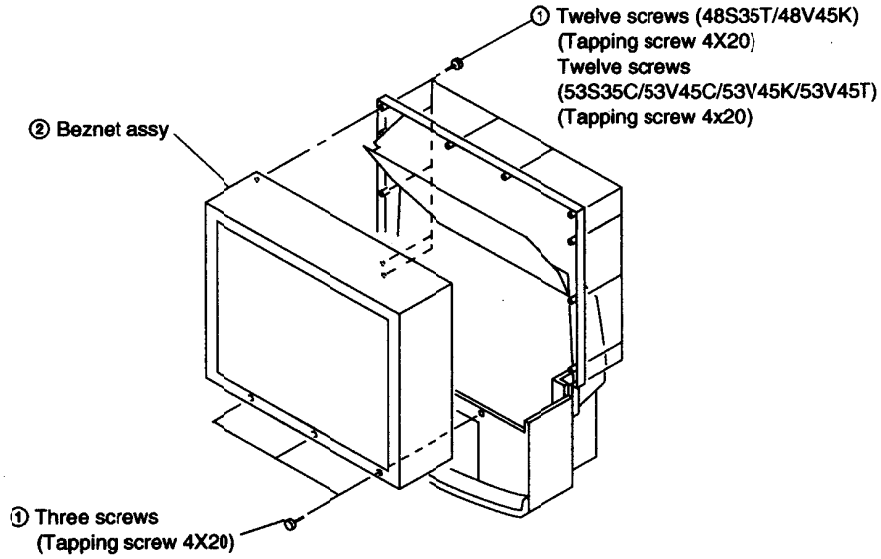


※ To remove the Speaker Grille, insert minus driver into an narrow opening between the cabinet and the Speaker Grille, and rotate the driver. Do this on the four corners indicated with circles.

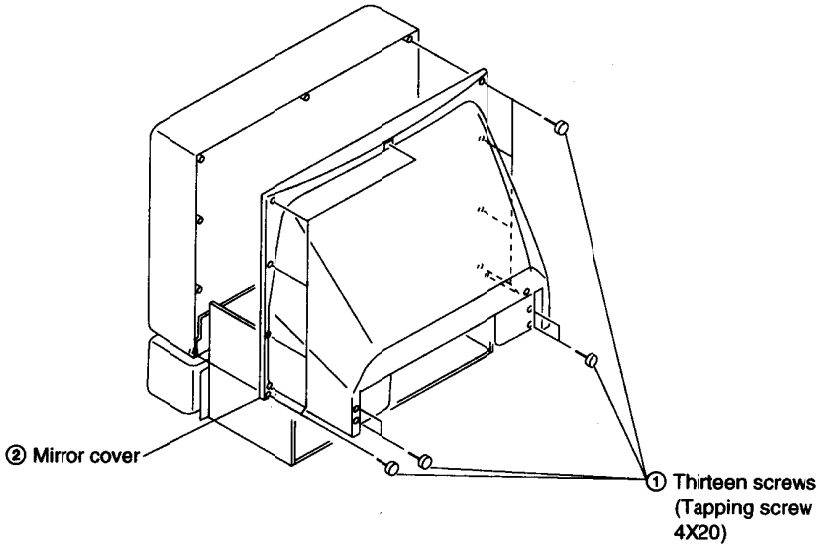
2-5-1. BEZNET ASSY REMOVAL (KP-41T35C/41T35K/41T35T)



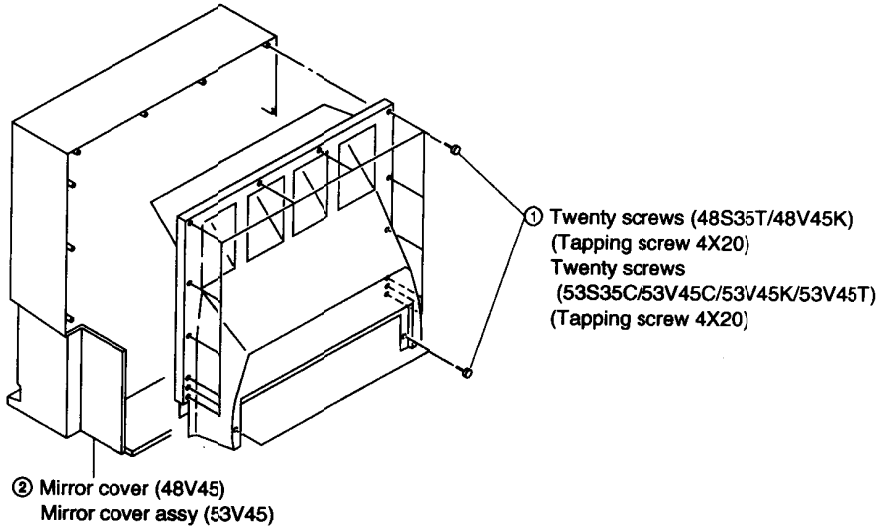
2-5-2. BEZNET ASSY REMOVAL (EXCEPT KP-41T35C/41T35K/41T35T)


① Twelve screws (48S35T/48V45K) (Tapping screw 4X20) Twelve screws (53S35C/53V45C/53V45K/53V45T) (Tapping screw 4x20)
② Beznet assy
① Three screws (Tapping screw 4X20)

2-6-1. MIRROR COVER ASSY REMOVAL (KP-41T35C/41T35K/41T35T)

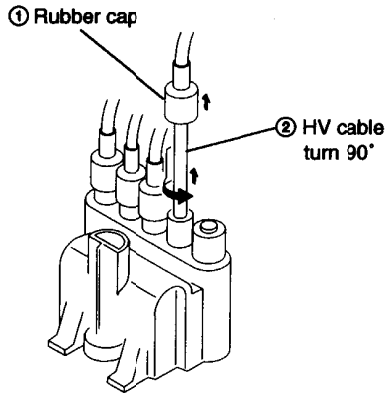


2-6-2. MIRROR COVER ASSY REMOVAL (EXCEPT KP-41T35C/41T35K/41T35T)

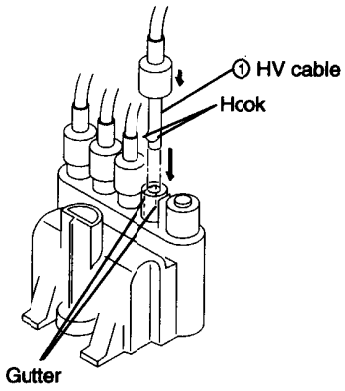


2-7. HIGH-VOLTAGE CABLE INSTALLATION AND REMOVAL

(1) Remover



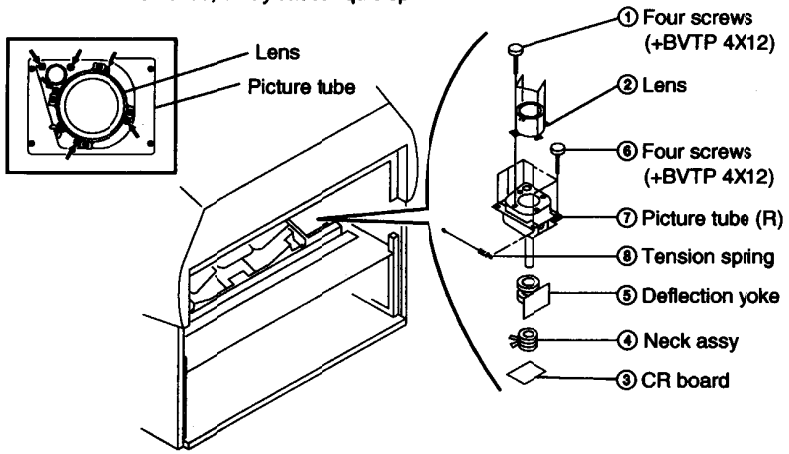
(2) Installation



2-8-2. PICTURE TUBE REMOVAL (EXCEPT KP-41T35C/41T35K/41T35T)

CAUTION: Removing the arrow-marked screws is strictly prohibited.

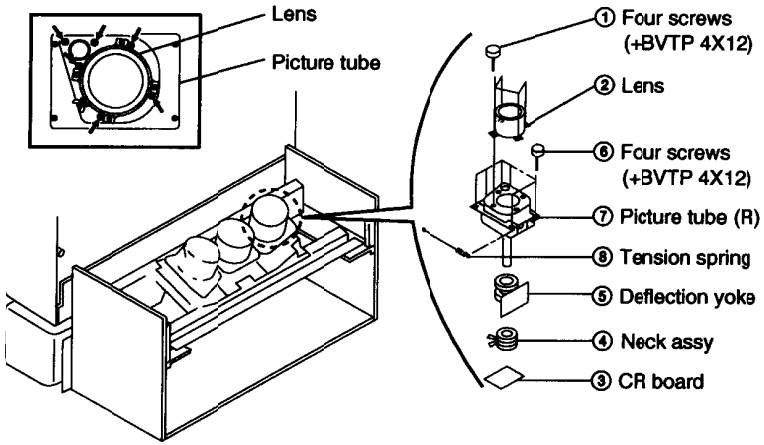
If removed, it may cause liquid spill.



2-8-1. PICTURE TUBE REMOVAL (KP-41T35C/41T35K/41T35T)

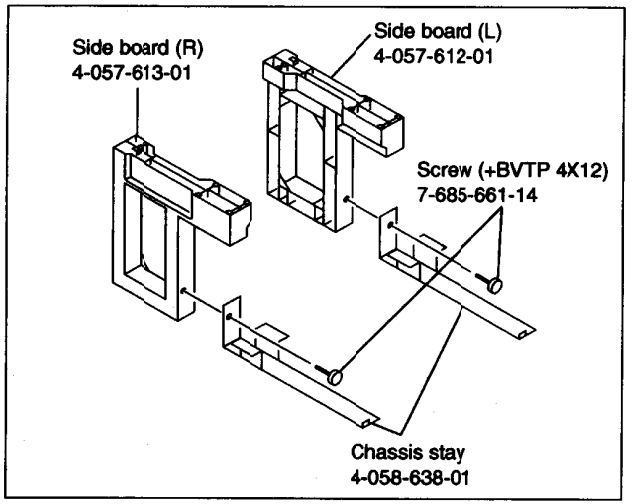
CAUTION: Removing the arrow-marked screws is strictly prohibited.

If removed, it may cause liquid spill.

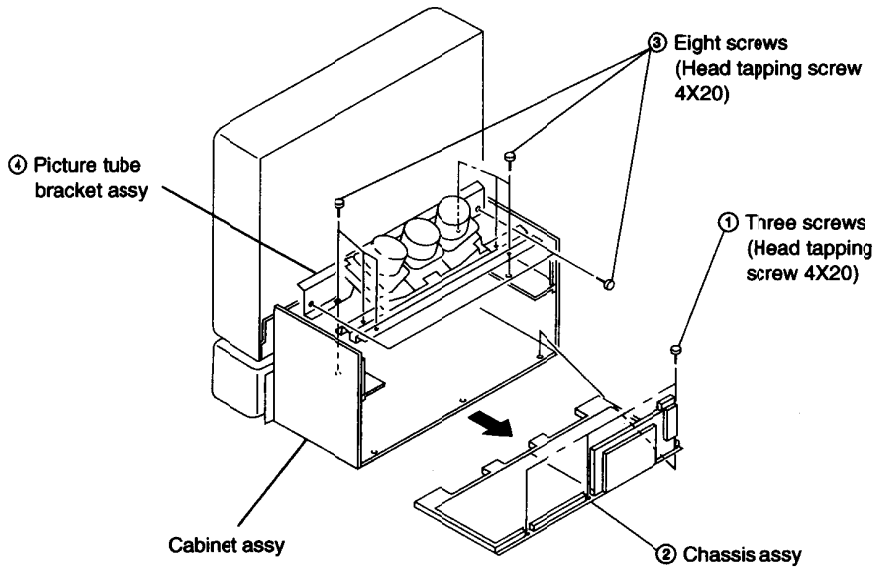


2-9-1. SERVICE STAY ASSY HOW TO USE AND CARRY BACK SERVICE STAY ASSY

SERVICE STAY ASSY



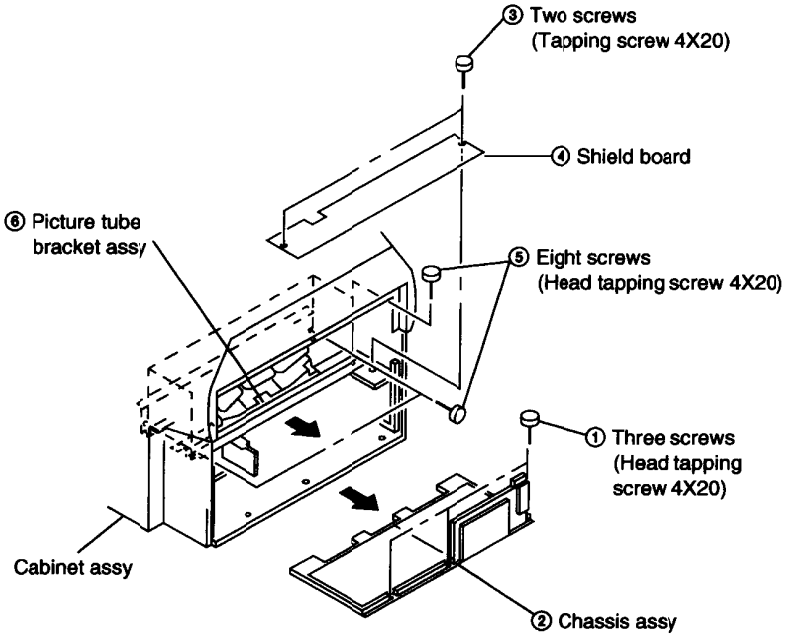
2-9-2. PICTURE TUBE BRACKET ASSY REMOVAL (KP-41T35C/41T35K/41T35T)



1) Remove ① three screws (head tapping screw 4X20) and pull out ② chassis assy from cabinet assy.
2) Remove ③ eight screws (head tapping screw 4X20) and release ④ picture tube bracket assy from cabinet assy.

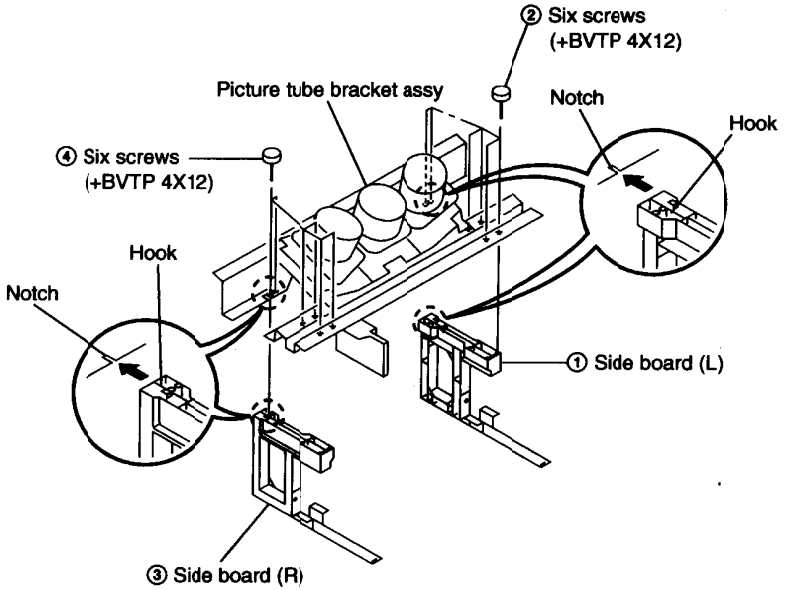
2-9-3. PICTURE TUBE BRACKET ASSY REMOVAL (EXCEPT KP-41T35C/41T35K/41T35T)

- **Disassemble HA board and speaker cord.**
- **Disassemble all the harness from purse lock.**



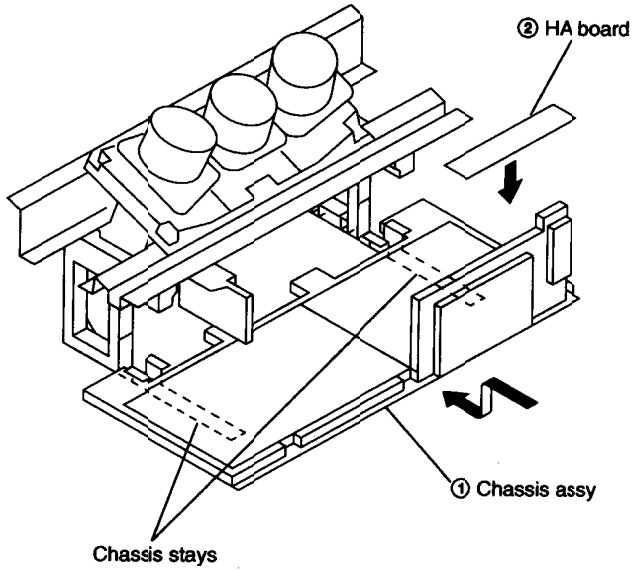
1) Remove ① three screws (head tapping screw 4X20) and pull out ② chassis assy from cabinet assy.
2) Remove ③ two screws (tapping screw 4X20) and remove ④ shield board.
3) Remove ⑤ eight screws (head tapping screw 4X20) and release ⑥ picture tube bracket assy from cabinet assy.

2-9-4. SETTING OF SERVICE STAY ASSY



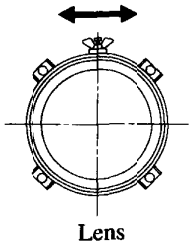
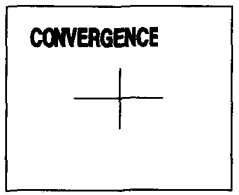
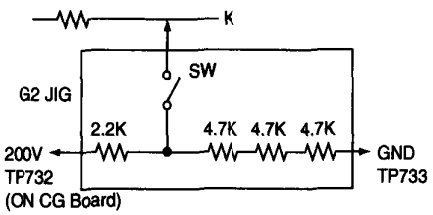
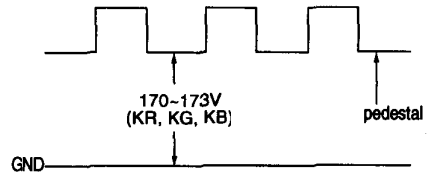
1) Lift up picture tube bracket assy and fit the hook of ① side board (L) to the notch on the assy. Then fix then with ② six screws (+BVTP 4X12).
2) Lift up picture tube bracket assy and fit the hook of ③ side board (R) to the notch on the assy. Then fix then with ④ six screws (+BVTP 4X12).

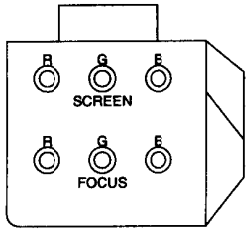
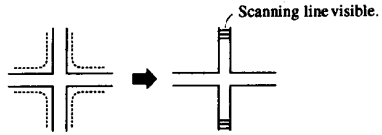
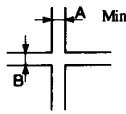
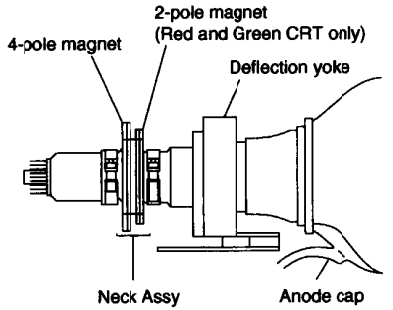
2-9-5. INSTALL A CHASSIS ASSY

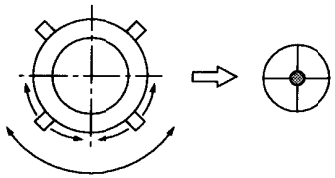
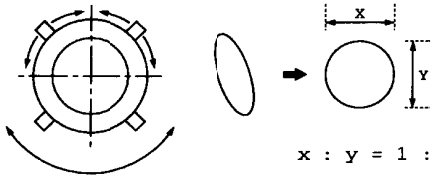
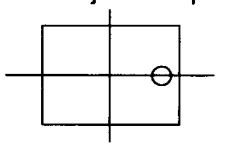
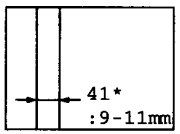


1) Put ① chassis assy on chassis stays.
2) Put ② HA board on ① chassis assy.
3) Put HV bracket on ① chassis assy. (KP-41T35 only)
4) You can carry the chassis assy in this condition.

SECTION 3
SET-UP ADJUSTMENTS

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
SCREEN VOLTAGE ADJUSTMENT (ROUGH ALIGNMENT) 1. Turn the red VR on the FOCUS block all the way to the left and then gradually turn it to the right until the point where you can see the retrace line. 2. Next gradually turn it to the left to the position where the retrace line disappears. **FOCUS LENS ADJUSTMENT** 1. Loosen the lens screw. 2. Set in service mode. 3. Use VP on the service mode menu to show only the green colour. 4. Press the Commander Menu button and select FEATURES and CONVERGENCE to display the test signal on the screen. 5. Rotate the green lens and align with the optimal focus point from the test signal. 6. Use RG-RH from the service mode menu to set to green and red. 7. Disply the test signal and rotate the red lens to obtain the optimum focus at the point where the red and green spots overlap. 8. Use RG-BH from the service mode menu to set to red and blue. 9. Disply the test signal and rotate the blue lens to obtain the optimum focus at the point where the blue and red spots overlap. 10. Tighten the lens screw. **SCREEN (G2) ADJUSTMENT** 1. Select VIDEO mode without signals. 2. Connect the G2 JIG between TP732 (200V) and TP733 (GND) on the CG Board. 3. Connect an oscilloscope to the TP701 (KR), TP731 (KG) and TP761 (KB) of CR board, CG board and CB board. 4. Adjust 170~173V (KR, KG, KB) by rotating screen VR on the focus block.	Monoscope Pattern		PICTURE ..... minimum BRIGHTNESS ..... 50% SCREEN (G2)	 Lens   

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
FOCUS VR ADJUSTMENT 1. Set in service mode. 2. Use VP on the service mode menu to show only the green colour. 3. Press the Commander Menu button (convergence) and output the test signal. 4. Rotate the green VR on the FOCUS block and align to obtain the optimal focus point. 5. Use RG-RH from the service mode menu to set to green and red. 6. Disply the test signal and rotate the red VR to obtain the optimum focus at the point where the red and green spots overlap. 7. Use RG-BH from the service mode menu to set to red and blue. 8. Disply the test signal and rotate the blue VR aligning to obtain the optimum focus at the point where the blue and green spots overlap.				 FOCUS block  
DEFLECTION YOKE TILT ADJUSTMENT 1. Set in service mode. 2. Set to receive the monoscope signal. 3. Use VP on the service mode menu to show only the green colour. 4. Loosen the deflection yoke set screw and align the tilt of the deflection yoke so that the bars at the centre of the monoscope pattern are horizontal. 5. After aligning the deflection yoke, fasten it securely to the funnel-shaped portion (neck) of the CRT. 6. The tilt of the deflection yoke for red is aligned with RG-RH on the service mode menu, and the tilt on the deflection yoke for blue is aligned with RG-BH on the service menu, is aligned the same as was done for green.	Monoscope pattern			

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
2-POLE MAGNET ADJUSTMENT 1. Set in Service mode. 2. Set to receive the dot pattern signal. 3. Place the caps on the red and blue lens so that only the green color is shown. 4. Turn the green VR on the focus block to the right and set to overfocus to enlarge the spot. 5. Now align the 2-Pole Magnet so that the enlarged spot is in the center of the Just Focus spot. 6. Align the green focus VR and set for just (precise) focus. 7. Perform the same alignment for red and blue.	Dot pattern		2-pole magnet	Use the center dot 
4-POLE MAGNET ADJUSTMENT 1. Set in service mode. 2. Set to receive the dot pattern signal. 3. Remove CN302 connector for A board. 4. Place the caps on the red and blue lens so that only the green color is shown. 5. Turn the green VR on the focus block to the left and set to underfocus to enlarge the spot. 6. Now align the 4-Pole Magnet so that the enlarged spot becomes a perfect circle.	Dot pattern		4-pole magnet	Use the center dot 
DEFOCUS ADJUSTMENT 1. Receive the crosshatch signal. 2. Adjust the FOCUS knob so that the crosshatch pattern vertical line width is as in the figure on the right. 3. Blue only defocus Adjustment.	Dot pattern		FOCUS VR • RED • GREEN • BLUE	• Focus adjustment point  

ELECTRICAL ADJUSTMENT BY REMOTE COMMANDER

By using Remote Commander (RM-Y136A/RM-Y901), all circuit adjustments can be made.

NOTE : Test Equipment Required.

1. Pattern Generator
2. Frequency counter
3. Digital multimeter
4. Audio oscillator

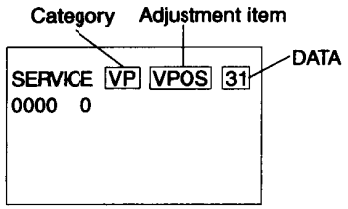
1. METHOD OF SETTING THE SERVICE ADJUSTMENT MODE

SERVICE MODE PROCEDURE

1. Standby mode. (Power off)
2. [DISPLAY] → [5] → [VOL (+)] → [TV POWER] on the Remote Commander.

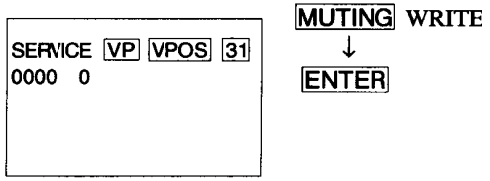
([+] → [5] → ◿ → [▢]) (Press each button within a second.)

SERVICE MODE ADJUSTMENT



3. The CRT displays the item being adjusted.
4. Press [1] or [4] on the Remote Commander to select the adjustment item.
5. Press [3] or [6] on the Remote Commander to change the data.
6. Press [2] or [5] on the Remote Commander to select the category.
7. If you want to recover the latest values press [7] then [ENTER] to read the memory.
8. Press [MUTING] then [ENTER] to write into memory.

SERVICE ADJUSTMENT MODE MEMORY

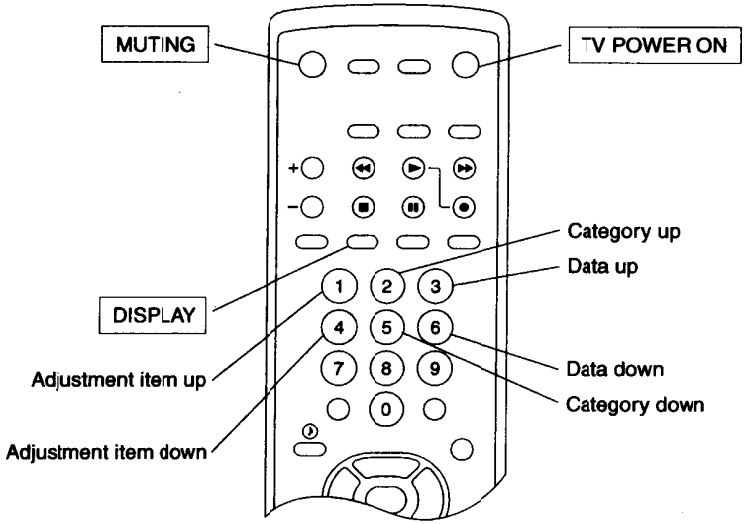


8. Press [8] then [ENTER] on the Remote Commander to initialize.
9. Turn set off and on to exit.

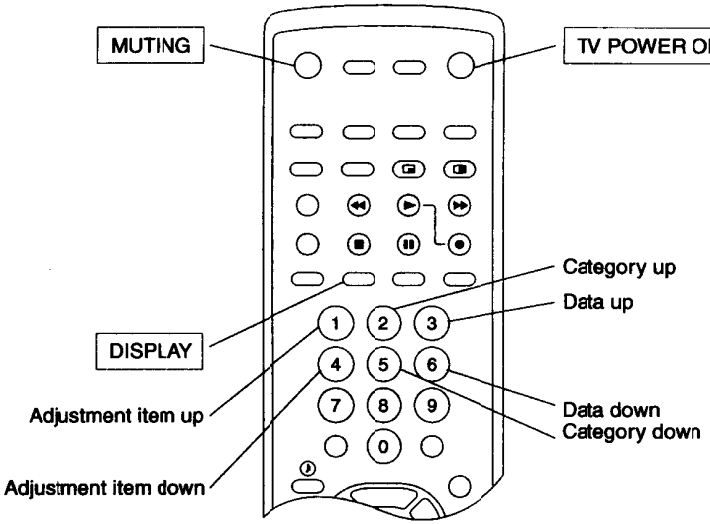
2. MEMORY WRITE CONFIRMATION METHOD

1. After adjustment, remove the plug from AC outlet, and then replace the plug in AC outlet again.
2. Turn the power switch ON and set to Service Mode.
3. Call the adjusted items again and confirm they were adjusted.

3. ADJUST BUTTONS AND INDICATOR



RM-Y136A
(KP-41T35C/41T35T/48S35T/53S35C)



RM-Y149 (KP-41T35K)
RM-Y901 (KP-53V45C/53V45T)
RM-Y901K (KP-48V45K/53V45K)

4. SERVICE MODE LIST

VP

Category	Adjustment iten	Standard data	Data range	Note
VP	VPOS		0-63	V SHIFT
	VSIZ		0-63	V SIZE
	VCOM	0	0-3	HV-COMP-V
	VLIN	7	0-15	V LIN
	VSCO	7	0-15	S CORRECTION
	HPOS	7	0-15	H SHIFT
	HSIZ		0-63	H SIZE
	PAMP		0-63	PIN AMP
	UPIN	7	0-15	UPPER CORNER PIN
	LPIN	7	0-15	LOWER CORNER PIN
	PPHA	7	0-15	H TRAPEZOID
	AFC	2	0-3	AFC LOOP GAIN
	VBOW	7	0-15	V BOW
	VANG	7	0-15	V ANGLE
	REF	3	0-3	AKB REFERENCE
	GDRV		0-63	GREEN DRIVE
	BDRV		0-63	BLUE DRIVE
	GCUT		0-15	GREEN CUT OFF
	BCUT		0-15	BLUE CUT OFF
	SCON		0-15	SUB CONTRAST
	SHUE		0-15	SUB HUE
	SCOL		0-15	SUB COLOR
	SBRT		0-63	SUB BRIGHTNESS
	SSHP	7	0-15	SUB SHARPNESS
	GMMA	1	0-3	GAMMA LEVEL
	CDM2	0	0,1	COUNT DOWN MODE 2
	DPIX	1	0,1	DYNAMIC PICTURE
	Y-DC	1	0,1	DC TRANSMISSION RATIO
	ABLM	1	0,1	ABL MODE
	AXIS	0	0,1	R-Y, G-Y AXIS
	NOTC	0	0,1	C TRAP
	CROM	7	0-15	C TRAP F0
	TOT	0	0,1	C TOT FILTER
	PREL	3	0-3	PRE/OVER LEVEL
	SHPF	3	0-3	SHARPNESS F0
	RON		0,1	RED ON/OFF
	GON		0,1	GREEN ON/OFF
	BON		0,1	BLUE ON/OFF
	DCOL		0,1	DYNAMIC COLOR
	CDM0	0	0,1	V COUNT DOWN
	LBLK	13	0-15	H BLK WIDTH LEFT SIDE
	RBLK	13	0-15	H BLK WIDTH RIGHT SIDE

AP

Category	Adjustment item	Standard data		Data range	Note
		41T	V		
AP	SVOL	0	0	0-15	SUB VOLUME
	SBAL	7	7	0-15	SUB BLANCE
	SBAS	9	7	0-15	SUB BASS
	STRE	6	7	0-15	SUB TREBLE

RG

Category	Adjustment item	Standard data	Data range	Note
RG	GH CENT		-127- +127	GREEN H SENT
	GH SKEW		-127-+127	GREEN H SKEW
	GH BOW		-127-+127	GREEN H BOW
	GH 4BOW		-127-+127	GREEN H 4TH BOW
	GH SIZE		-127-+127	GREEN H SIZE
	GH LIN		-127-+127	GREEN H LINEARITY
	GH MSIZ		-127-+127	GREEN H MID SIZE
	GH MLIN		-127-+127	GREEN H MID LINEARITY
	GH KEY		-127-+127	GREEN H KEY
	GH SSKW		-127-+127	GREEN H SUB SKEW
	GH MPIN		-127-+127	GREEN H MID PIN
	GH PIN		-127-+127	GREEN H PIN
	GH SBOW		-127-+127	GREEN H SUB BOW
	GH MBOW		-127-+127	GREEN H MID BOW
	GH 4PIN		-127-+127	GREEN H 4TH PIN
	GH 4SBO		-127-+127	GREEN H 4TH SUB BOW
	GV CENT		-127-+127	GREEN V CENT
	GV SKEW		-127-+127	GREEN V SKEW
	GV BOW		-127-+127	GREEN V BOW
	GV SIZE		-127-+127	GREEN V SIZE
	GV LIN		-127-+127	GREEN V LINEARITY
	GV MSIZ		-127-+127	GREEN V MID SIZE
	GV MKEY		-127-+127	GREEN V MID KEY
	GV KEY		-127-+127	GREEN V KEY
	GV SSKW		-127-+127	GREEN V SUB SKEW
	GV MPIN		-127-+127	GREEN V MID PIN
	GV PIN		-127-+127	GREEN V PIN
	GV SBOW		-127-+127	GREEN V SUB BOW
	GV WAVE		-127-+127	GREEN V WAVE
	GV 4PIN		-127-+127	GREEN V 4TH PIN
	RH CENT		-95-+96	RED H CENT
	RH SKEW		-127-+127	RED H SKEW
	RH BOW		-127-+127	RED H BOW
	RH 4BOW		-127-+127	RED H 4TH BOW
	RH SIZE		-127-+127	RED H SIZE
	RH LIN		-127-+127	RED H LINEARITY
	RH MSIZ		-127-+127	RED H MID SIZE
	RH MLIN		-127-+127	RED H MID LINEARITY
	RH KEY		-127-+127	RED H KEY
	RH SSKW		-127-+127	RED H SUB SKEW
	RH MPIN		-127-+127	RED H MID PIN
	RH PIN		-127-+127	RED H PIN
	RH SBOW		-127-+127	RED H SUB BOW
	RH MBOW		-127-+127	RED H MID BOW
	RH 4PIN		-127-+127	RED H 4TH PIN
	RH 4SBO		-127-+127	RED H 4TH SUB BOW
	RV CENT		-95-+96	RED V CEVT
	RV SKEW		-127-+127	RED V SKEW
	RV BOW		-127-+127	RED V BOW
	RV SIZE		-127-+127	RED V SIZE
	RV LIN		-127-+127	RED V LINEARITY
	RV MSIZ		-127-+127	RED V MID SIZE
	RV MKEY		-127-+127	RED V MID KEY
	RV KEY		-127-+127	RED V KEY
	RV SSKW		-127-+127	RED V SUB SKEW
	RV MPIN		-127-+127	RED V MID PIN
	RV PIN		-127-+127	RED V PIN
	RV SBOW		-127-+127	RED V SUB BOW
	RV WAVE		-127-+127	RED V WAVE
	RV 4PIN		-127-+127	RED V 4TH PIN
	RV WING		-31-+32	RED V WING
	BH CENT		-95-+96	BLUE H CENT
	BH SKEW		-127-+127	BLUE H SKEW
	BH BOW		-127-+127	BLUE H BOW
	BH 4BOW		-127-+127	BLUE H 4TH BOW
	BH SIZE		-127-+127	BLUE H SIZE
	BH LIN		-127-+127	BLUE H LINEARITY
	BH MSIZ		-127-+127	BLUE H MID SIZE
	BH MLIN		-127-+127	BLUE H MID LINEARITY
	BH KEY		-127-+127	BLUE H KEY
	BH SSKW		-127-+127	BLUE H SUB SKEW
	BH MPIN		-127-+127	BLUE H MID PIN
	BH PIN		-127-+127	BLUE H PIN
	BH SBOW		-127-+127	BLUE H SUB BOW
	BH MBOW		-127-+127	BLUE H MID BOW

Category	Adjustment item	Standard data	Data range	Note
RG	BH 4PIN		-127-+127	BLUE H 4TH PIN
	BH 4SBO		-127-+127	BLUE H 4TH SUB BOW
	BV CENT		-95-+96	BLUE V CENT
	BV SKEW		-127-+127	BLUE V SKEW
	BV BOW		-127-+127	BLUE V BOW
	BV SIZE		-127-+127	BLUE V SIZE
	BV LIN		-127-+127	BLUE V LINEARITY
	BV MSIZ		-127-+127	BLUE V MID SIZE
	BV MKEY		-127-+127	BLUE V MID KEY
	BV KEY		-127-+127	BLUE V KEY
	BV SSKW		-127-+127	BLUE V SUB SKEW
	BV MPIN		-127-+127	BLUE V MID PIN
	BV PIN		-127-+127	BLUE V PIN
	BV SBOW		-127-+127	BLUE V SUB BOW
	BV WAVE		-127-+127	BLUE V WAVE
	BV 4PIN		-127-+127	BLUE V 4TH PIN
	BV WING		-31-+32	BLUE V WING

CC

Category	Adjustment item	Standard data	Data range	Note
CC	CRIH	9	0-15	CRI COUNT HIGH
	CRIL	2	0-15	CRI COUNT LOW
	CFLD	5	0-15	FIXED FIELD COUNT
	CCDI	3	0-7	NO CCD INT COMPARE
	CRIP	4	0-7	CRI & PARITY ERROR
	CRIT	1	0-3	CRI TIME CONSTANT
	CSB1	3	0-3	SYNC SLICE BIAS 1
	CSB2	4	0-7	SYNC SLICE BIAS 2
	CCBD	4	0-15	C SYNC BACKPORCH DET
	CCFD	7	0-15	C SYNC FRONTPORCH DET
	CREP	142	0-255	CRI SIGNAL END POSITION
	CSEP	186	0-255	START BIT END POSITION
	CRBD	8	0-15	CRI BACKPORCH DET
	CRFD	9	0-15	CRI FRONTPORCH DET
	CSSD	3	0-15	STROBE WINDOW ST DLY
	CSED	9	0-15	STROBE WINDOW ED DLY
	CSBS	12	0-31	START BIT THRESHOLD
	CDSD	8	0-31	DATA START DELAY
	CCDS	9	0-31	CAPTION DT THRESHOLD
	CHMK	42	0-63	H SYNC MASK WIDTH
	CHSY	136	0-255	H SYNC VCO COUNT

OP

Category	Adjustment item	Standard data	Data range	Note
OP	DISP		0-63	OSD POSITION
	PDPS		0-255	FAV/IDX CH POSITION
	PDPO		0-7	CH POSITION (OFF SET)

ID

Category	Adjustment item	Standard data		Data range	Note
		41T	V		
ID	ID0	25	25	0-255	MODEL ID#0
	ID1	55	55	0-255	MODEL ID#1
	ID2	31	47	0-255	MODEL ID#2
	ID3	0	0	0-255	MODEL ID#3
	ID4	155	155	0-255	MODEL ID#4
	ID5	177	181	0-255	MODEL ID#5
	ID6	198	214	0-255	MODEL ID#6
	ID7	66	70	0-255	MODEL ID#7

PP

Category	Adjustment item	Standard data		Data range	Note
		41T	V		
PP	BGHP	-		0-15	PIP H POSITION
	BGVP	-		0-15	PIP V POSITION
	MAHP	-		0-15	P&P MAIN H AQUISITION
	MAVP	-		0-255	P&P MAIN V AQUISITION
	SAHP	-		0-15	P&P SUB H AQUISITION
	SAVP	-		0-255	P&P SUB V AQUISITION
	DECS	-	18	0-31	S DECODER REGISTERS
	DECM	-	18	0-31	M DECODER REGISTERS
	DIS	-	66	0-127	DISPLAY SETTING
	BSIZ	-	2	0-15	BORDER SIZE
	6BIT	-	1	0-3	6bit (SMART6/SKIP6)
	VPED	-		0-15	V OFFSET
	UPED	-		0-15	U OFFSET

PS

Category	Adjustment item	Standard data	Data range	Note
PS	PIPH		0-127	PIP H POSITION
	PIPV		0-63	PIP V POSITION
	PMVD	26	0-31	PIP V PULSE DELAY(M)
	PIVD	22	0-31	PIP V PULSE DELAY(I)
	PCON		0-15	PIP CONTRAST(I)

Category	Adjustment item	Standard data	Data range	Note
PS	FRMY	7	0-15	PIP FRAME Y LEVEL
	IPER	0	0-15	PIP PEDESTAL R-Y(I)
	IPEB	0	0-15	PIP PEDESTAL B-Y(I)
	IHUE		0-15	PIP SUB HUE
	ICOL		0-15	PIP SUB COLOR
	PHDL	3	0-15	PIP H PULSE DELAY
	PYSD	0	0-15	PIP SELECT DELAY
	PYDL	0	0-7	PIP Y DELAY
	PCPS	0	0,1	PIP CLP
	PCPF	0	0,1	PIP CLP CYCLES
	PSEL	0	0,1	PIP SELDOWN
	PPLL	0	0-3	PIP PLL
	CHRI	1	0,1	PIP INPUT POLARITY
	CHRO	0	0,1	PIP OUTPUT POLARITY

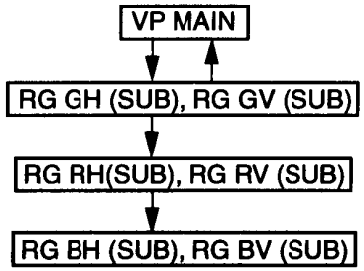
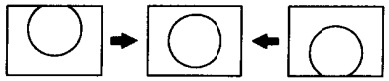
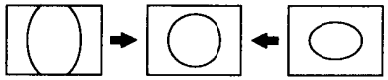
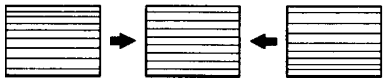
MC

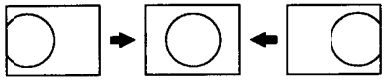
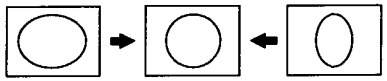
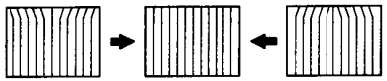
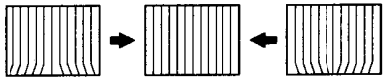
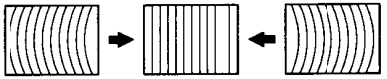
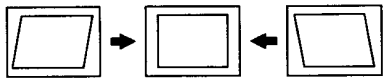
Category	Adjustment item	Standard data	Data range	Note
MC	MSCN	-	0-15	P&P MAIN SUB CONTRAST
	MSHU	-	0-15	P&P MAIN SUB HUE
	MSCL	-	0-15	P&P MAIN SUB COLOR
	MUPD	-	0-15	P&P MAIN U OFFSET
	MVPD	-	0-15	P&P MAIN V OFFSET
	MDLY	-	0-3	P&P MAIN Y DELAY
	MBGR	-	0-3	P&P MAIN SCP CONTROL(1)
	MBGF	-	0-3	P&P MAIN SCP CONTROL(2)

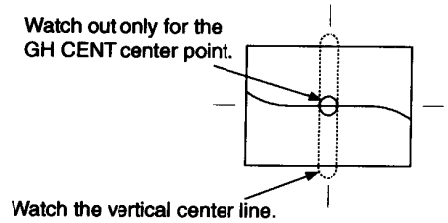
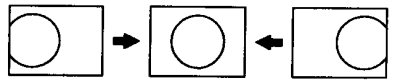
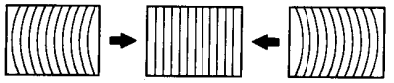
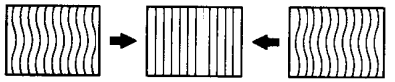
IC

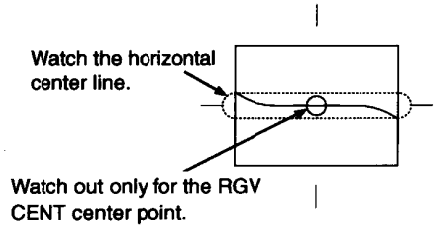
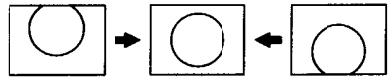
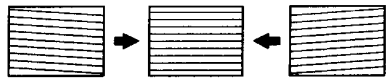
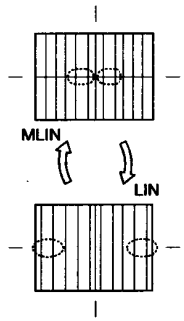
Category	Adjustment item	Standard data		Data range	Note
		41T	V		
IC	SSCN	-		0-15	P&P SUB SUB CONTRAST
	SSHU	-		0-15	P&P SUB SUB HUE
	SSCL	-		0-15	P&P SUB SUB COLOR
	SUPD	-		0-15	P&P SUB U OFFSET
	SVPD	-		0-15	P&P SUB V OFFSET
	SDLY	-	0	0-3	P&P SUB Y DELAY
	SBGR	-	1	0-3	P&P SUB SCP CONTROL(1)
	SBGF	-	1	0-3	P&P SUB SCP CONTROL(2)
	PAFC	-	2	0-3	PIP AFC LOOP GAIN
	PTOT	-	0	0,1	PIP CHROMA TOT FILTER
	PYDR	-	15	0-31	PIP Y DRIVE
	PYDC	-	4	0-7	PIP DC TRAN

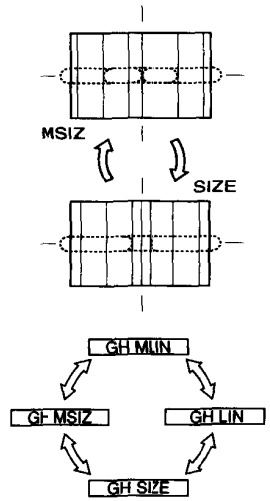
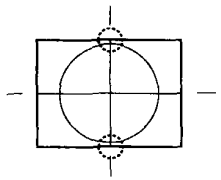
Category	Adjustment item	Standard data		Data range	Note
		41T	V		
IC	PSHP	-	1	0,1	PIP SHARPNESS F0
	PDPI	-	1	0,1	PIP DYNAMIC PICTURE
	PSYS	-	0	0-3	PIP COLOR SYSTEM
	PXTL	-	0	0-3	PIP X' TAL
	PLOP	-	0	0-3	PIP COLOR LOOP

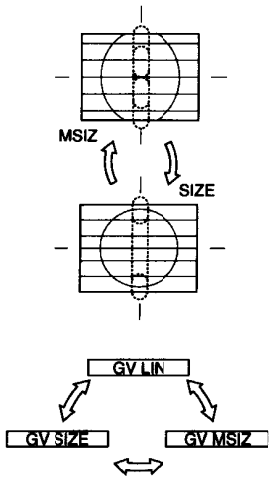
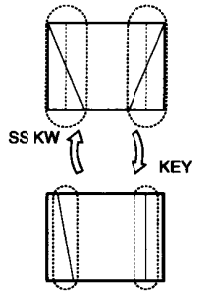
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
CONVERGENCE ADJUSTMENT ●When replacing the deflection yoke, always perform "DEFLECTION YOKE TILT ADJUSTMENT" before adjusting the convergence. Adjustment procedure  				
• GREEN REGISTRATION ADJUSTMENT			<VP MENU>	
• V-SHIFT adjustment	Monoscope pattern or Crosshatch pattern		VP VPOS	VPOS 
• V-LINEARITY adjustment			VP VSIZ	VSIZ 
• V-SIZE, V-CORRECTION adjustment While tracking, adjust so that the lattice intervals for VSIZ and VSCO are equal.			VP VLIN VP VSCO	VLIN  VSCO

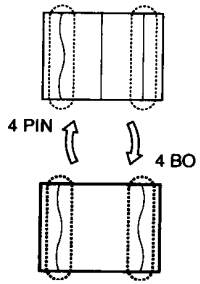
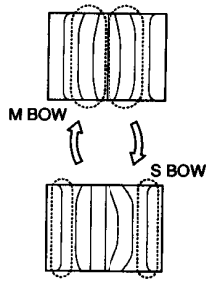
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
• H-SHIFT adjustment			VP HPOS	HPOS 
• H-SIZE adjustment Finely adjust with SUB MSIZ.			VP HSIZ	HSIZ 
• PIN-AMP adjustment Finely adjust with SUB MPIN.			VP PAMP	PAMP
• UPPER/LOWER-CORNER PIN adjustment Correct the screens top and bottom bow line. However, if this adjustment is overdone, distortion may occur with the PIN-AMP adjustment that can not be re-adjusted. Note : The PIN-AMP adjusts the overall screen from top to bottom, but the UPPER/LOWER-CORNER PIN adjustments have large movement in the top and bottom sections, so be careful.			VP UPIN	UPIN 
			VP LPIN	LPIN 
• V-BOW, V-ANGLE adjustment Correct the tilt and bow of the vertical line at the center of the screen.			VP VBOW	VBOW 
			VP VANG	VANG 

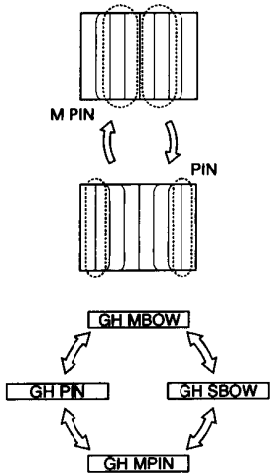
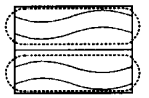
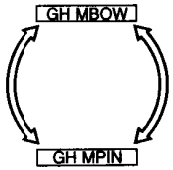
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
• GREEN SUB ADJUSTMENT **SCREEN CENTER SECTION GREEN VERTICAL LINE ADJUSTMENT** 1. Finely adjust with GH CENT, GH BOW, GH SKEW. Adjust by watching out for the RGH CENT screen center section.			<RG-GH MENU> GH CENT GH SKEW GH BOW	 GH CENT  GH SKEW GH BOW 
2. GH 4TH BOW adjustment Correct the corner distortion that could not be adjusted away with the GH BOW adjustment.			GH 4BOW	GH 4BOW 

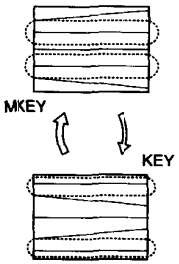
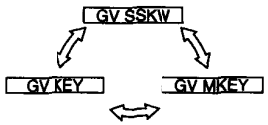
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
SCREEN CENTER SECTION GREEN HORIZONTAL LINE ADJUSTMENT 1. Finely adjust the center position of the vertical line at the center of the screen with GV CENT.			<RG-GV MENU> GV CENT	 GV CENT 
2. Correct the tilt and bow of the horizontal line at the center of the screen with GV SKEW and GV BOW.			GV SKEW GV BOW	GV SKEW  GV BOW
GREEN SIZE AND LINEARITY ADJUSTMENT 1. Balance the sizes at both sides of the center section of the screen with GH MLIN. 2. Balance the sizes on both end sections of the screen with GH LIN. 3. While tracking, adjust with GH MLIN and GH LIN so that the sizes of the horizontal line at the center of the screen are symmetrical left and right.			<RG-RH MENU> GH MLIN GH LIN	

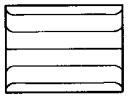
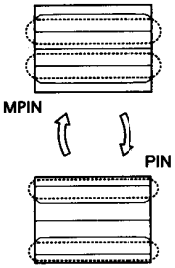
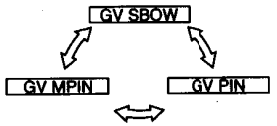
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
GREEN HORIZONTAL SIZE ADJUSTMENT 1. Adjust with GH MSIZE so that the sizes of both ends and of both sides of the center section of the screen are equal. 2. Adjust with GH SIZE so that the horizontal sizes of both ends and of both sides of the center section of the screen are equal. 3. While tracking, adjust with GH MSIZ and GH SIZE so that the lattice intervals for the horizontal line section of the center section of the screen are equal and so that the horizontal size is the prescribed value. 4. If M LIN is changed when the GH MSIZ and GH SIZE adjustment is complete, adjust again while tracking. ●With just the H SIZE adjustment in MAIN, if there is no need to adjust GH SIZE in SUB this can save power.			<RG-GH MENU> GH MSIZ GH SIZE	
GREEN VERTICAL LINEARITY ADJUSTMENT 1. Adjust GV LIN so that the vertical lines at the top and bottom of the screen are symmetrical.			<RG-GV MENU> GV LIN	

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
GREEN VERTICAL SIZE ADJUSTMENT 1. Adjust with GV MSIZE so that the sizes for the top and bottom sections of the screen and for both sides of the center section of the screen are equal. 2. Set the vertical size to the prescribed value with GV SIZE. 3. Adjust GV MSIZ and GV SIZE watching the vertical line at the center section of the screen. 4. While tracking, adjust with GV MSIZ and GV SIZE so that the lattice intervals for the vertical line section of the center section of the screen are equal and so that the vertical size is the regulation value. 5. If GV LIN is out of place when the GV MSIZ and GV SIZE adjustment is complete, adjust again while tracking. ●If there is no need to adjust GV SIZE in SUB with just the V SIZE adjustment in MAIN, this can save power.			<RG-GV MENU> GV MSIZ GV SIZE	
GREEN HORIZONTAL TRAPEZOIDAL DISTORTION ADJUSTMENT 1. Adjust with GH SSKW so that the tilt of the vertical lines at both ends of the screen is symmetrical left and right. 2. Adjust with GH KEY so that there is no tilt in the vertical lines at both ends of the screen. 3. If there is a tilt on either the left or right after the GH KEY adjustment, adjust while tracking.			<RG-GH MENU> GH SSKW GH KEY	

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
GREEN HORIZONTAL QUATERNARY ADJUSTMENT 1. Correct the quaternary distortion with GH 4PIN. 2. While balancing, correct the quaternary distortion of both end sections of the screen with GH 4SBO. 3. While tracking, adjust with GH 4PIN and GH 4SBO.			<RG-GH MENU> GH 4PIN GH 4BOW	
GREEN HORIZONTAL ASYMMETRICAL PIN DISTORTION ADJUSTMENT 1. Adjust with GH MBOW so that the pin asymmetry at both sides of the center section of screen is symmetrical. 2. Adjust with GH SBOW so that the bow at both end sections of the screen is symmetrical left and right. 3. While tracking, adjust with GH MBOW and GH SBOW so that the bow of vertical lines on the entire screen is symmetrical left and right.			<RG-GH MENU> GH MBOW GH SBOW	

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
GREEN HORIZONTAL SYMMETRICAL PIN DISTORTION ADJUSTMENT 1. Adjust the pin distortion at both sides of the center section of the screen with GH MPIN. 2. Adjust the pin distortion at both end sections of the screen with GH PIN. 3. While tracking, adjust with GH MPIN and GH PIN so that the PIN of vertical lines on the entire screen have no bowing. 4. If there is asymmetrical pin distortion after the GH MPIN and GH PIN adjustments, adjust with GH MBOW and GH SBOW while tracking. ●With just the PIN AMP adjustment in MAIN, if there is no need to adjust GV PIN in SUB, this can save power.			<RG-GH MENU> GH MPIN GH PIN GH MBOW GH SBOW	
GREEN VERTICAL WAVE (TERTIARY DISTORTION) ADJUSTMENT 1. Take the screen top and bottom horizontal lines with GV WAVW and find the secondary and quaternary waveform. 2. There is KEY distortion after the GV WAVW adjustment, so adjust with GV WAVW and GV KEY while tracking.			<RG-GV MENU> GV WAVE GV KEY	GV WAVE  GV KEY 

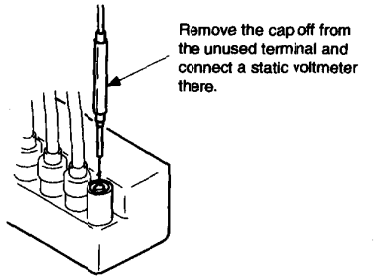
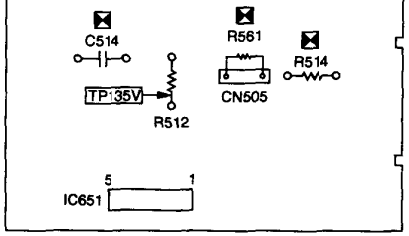
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
GREEN VERTICAL QUATERNARY DISTORTION ADJUSTMENT 1. Correct the quaternary distortion of the horizontal lines at the top and bottom sections of the screen with RGV 4PIN. 1) Since there is no 4SBOW for vertical correction, there will be a slight imbalance, but adjust to eliminate the distortion from the horizontal line at either the top or the bottom of the screen. 2) In many cases, the horizontal lines at the top and bottom sections of the screen are not straight lines after the adjustment. As long as the secondary distortion is mild enough that it can be corrected with the PIN adjustment, this is OK.			<RG-GV MENU> GV 4PIN	GV 4PIN
GREEN VERTICAL TRAPEZOIDAL DISTORTION ADJUSTMENT 1. Adjust with GV SSKW so that the tilt of the horizontal lines at the top and bottom sections of the screen is symmetrical about the center position horizontal line. 2. Adjust with GV MKEY so that there is no tilt for the line sections at both sides of the horizontal lines at the center section of the stream. 3. Adjust with GV KEY so that there is no tilt for the horizontal lines at the top and bottom sections of the screen. 4. While tracking, adjust with GV MKEY and GV KEY so that there is no tilt for the horizontal lines on the entire screen. 5. If the tilt is unbalanced after the GV MKEY and GV KEY adjustment, adjust again with GV SSKW.			<RG-GV MENU> GV SSKW GV MKEY GV KEY GV SSKW	GV SSKW  

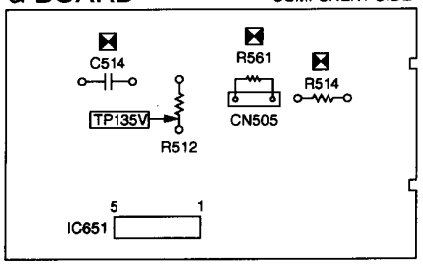
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
GREEN VERTICAL ASYMMETRICAL PIN DISTORTION (SECONDARY DISTORTION) ADJUSTMENT 1. Correct the asymmetrical pin distortion at the top and bottom sections of the screen with GV SBOW.			<RG-GV MENU> GV SBOW	RGV SBOW 
GREEN VERTICAL ASYMMETRICAL PIN DISTORTION ADJUSTMENT 1. Adjust the pin distortion for both side sections and the center of the screen with GV MPIN. 2. Adjust with GV PIN so that the horizontal lines at the top and bottom sections of the screen are straight lines. 3. Adjust with GV MPIN and GV PIN so that there is no curve in the horizontal lines on the entire screen.			<RG-GV MENU> GV MPIN GV PIN	
4. After the adjustments in Items 1-3, adjust the tracking with GV SBOW, GV MPIN, and GV PIN.			GV SBOW	

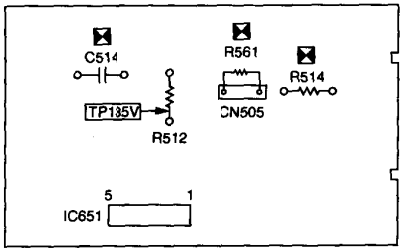
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
GREEN AND RED REGISTRATION ADJUSTMENT (RRH, RRV) 1. Receive a cross-hatch signal. 2. Adjust so that the red lines lay on the green lines. Adjust with the same procedure as the GREEN SUBadjustment. Notes : 1. The main correction is not carried out during red registration adjustment. 2. Beware. The green adjustment items can be changed by mistake. 3. Unlike for green, adjust within the range -127 ~ +128.	Cross-hatch pattern			
GREEN AND BLUE REGISTRATION ADJUSTMENT (RBH, RBV) 1. Receive a cross-hatch signal. 2. Adjust so that the blue and green lines are on top of each other. Notes : 1. The main correction is not carried out during RED registration adjustment. 2. Beware. The GREEN and RED adjustment items can be changed by mistake.	Cross-hatch pattern			

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
AGC ADJUSTMENT 1. Receive an off-air signal. 2. Adjust the AGC VR (TU 1001) so that there is no snow noise and cross-modulation.				
WHITE BALANCE ADJUSTMENT 1. Receive the monoscope pattern signal and adjust the picture quality with the menu. 2. Adjust service mode SBRT so that the signal 10 IRE section barely glows. 3. Receive the all-white pattern signal. 4. Adjust the white balance with service mode GCUT and BCUT. 5. Adjust service mode SBRT so that the signal 100 IRE section barely glows. 6. Adjust the white balance with service mode GDRV and BDRV. 7. Repeatedly adjust the white balance for the minimum and maximum picture settings.	Monoscope pattern All White pattern		PICTURE .....minimun <RGB MENU> RGB SBRT RGB GCUT RGB BCUT PICTURE .....minimun RGB GDRV RGB BDRV PICTURE .....maximum	

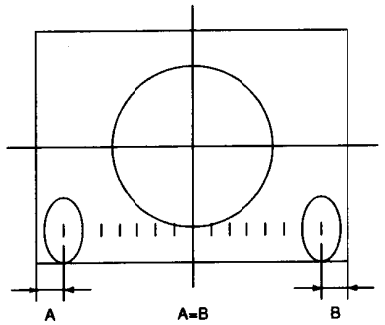
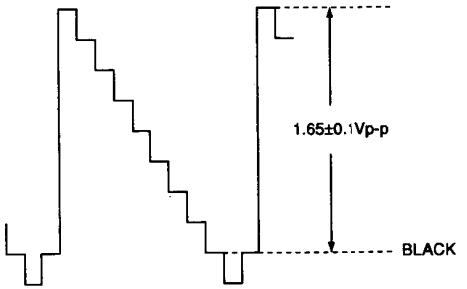
SECTION 4
SAFETY RELATED ADJUSTMENTS

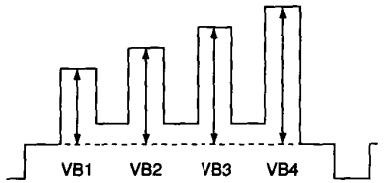
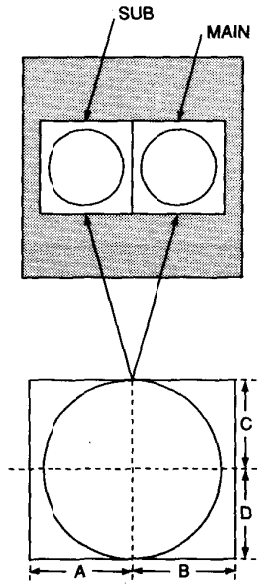
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
[G BOARD] **HV REGULATION CIRCUIT CHECK AND ADJUSTMENT** When replacing the following components marked with ◪ on the schematic diagram always check HV regulation, and if necessary re-adjust. **OPERATION CHECK** 1. Connect a HV static voltmeter to the unconnected plug of the high-voltage block. 2. Power on the set. 3. Receive dot signal pattern. (PICTURE and BRIGHT to minimum) 4. Check that the HV static voltmeter is reading 31.00±1.0kVdc. **HV Regulation adjustment** 1. Connect a HV static voltmeter to the unconnected plug of the high-voltage block. 2. Power on the set. 3. Receive dot signal pattern. (PICTURE and BRIGHT to minimum) 4. If anode voltage is 32kV or higher, replace C514 of 390PF/2kV with that of 680PF/2kV, and check if the voltage is within the standard range. 5. If anode voltage is 30kV or lower, replace C514 of 390PF/2kV with that of 100PF/2kV, and check if the voltage is within the standard range.		◪ marked parts C514, C516, C515, T502 (PMT), T503 (HLT), T504 (FBT), DEFLECTION YOKE, IC651	⊠ C514	 G BOARD -COMPONENT SIDE- 

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
[G BOARD] **HV HOLD DOWN CIRCUIT OPERATION CHECK AND ADJUSTMENT (⊠ R514, R561)** When replacing the following components marked with ◪ on the schematic diagram, always check hold-down voltage and if necessary re-adjust. **OPERATION CHECK** 1. Remove CN651 connecter. 2. Short-circuit across TP-PROT (R692) and ground. 3. Connect a HV static voltmeter to the unconnected plug of the high-voltage block. 4. Connect a 220k variable resistor, across pin ③ and pin ⑤ of IC651 set to maximum value. 5. Power on the set. 6. Receive dot signal pattern. (PICTURE and BRIGHT to minimum) 7. Gradually lower the value of the variable resistor and check that the hold-down circuit operates at a static voltmeter reading of 33.5±1.0kVdc when the raster disappears. **HV HOLD-DOWN ADJUSTMENT** 1. Repeat steps ① ~ ⑦ as above. 2. If hold down voltage is 34.5kV or higher, remove R514, mount a resistor (390kΩ, 1/4W : RN) onto R561 instead, and check again if the hold-down voltage is within the standard range. 3. If hold-down voltage is 32.5kV or lower, mount a resistor (220kΩ, 1/4W : RN) onto R561, and check again if the hold-down voltage is within the standard range. **NOTE :** Please finish the adjustment as soon as possible.		◪ marked parts R502, R514, R516, R517, R539, R560, R561, C507, C513, D501, D504, D507, IC301, IC501, IC651, T502 (PMT), T503 (HLT), T504(FBT) DEFLECTION YOKE	⊠ R514, 561	G BOARD -COMPONENT SIDE- 

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
[G BOARD] **+B MAX VOLTAGE CONFIRMATION** The following adjustments should always be performed when replacing IC651. 1. Supply 130VAC to variable autotransformer. 2. Input dot signal. 3. Set the PICTURE control and the BRIGHTNESS controls to minimum. 4. Confirm if the voltage of G BOARD TP135V is less than 137.0 Vdc. 5. If step 4 is not satisfied, replace IC651 and repeat above steps. **+B OVP CONFIRMATION** 1. Remove CN651 connector. 2. Connect a voltmeter to TP135V, and TP (PROT) and ground. 3. Connect a 220kΩ variable resistor, across pin ③ and pin ⑤ of IC651, and set to maximum value. 4. Supply 120VAC to variable autotransformer. 5. Set PICTURE and the BRIGHTNESS controls to minimum. 6. Gradually turn the 220kΩ variable register, and check if OVP works properly when the voltage of TP135V is between 139.0~151.5V.				G BOARD -COMPONENT SIDE- 

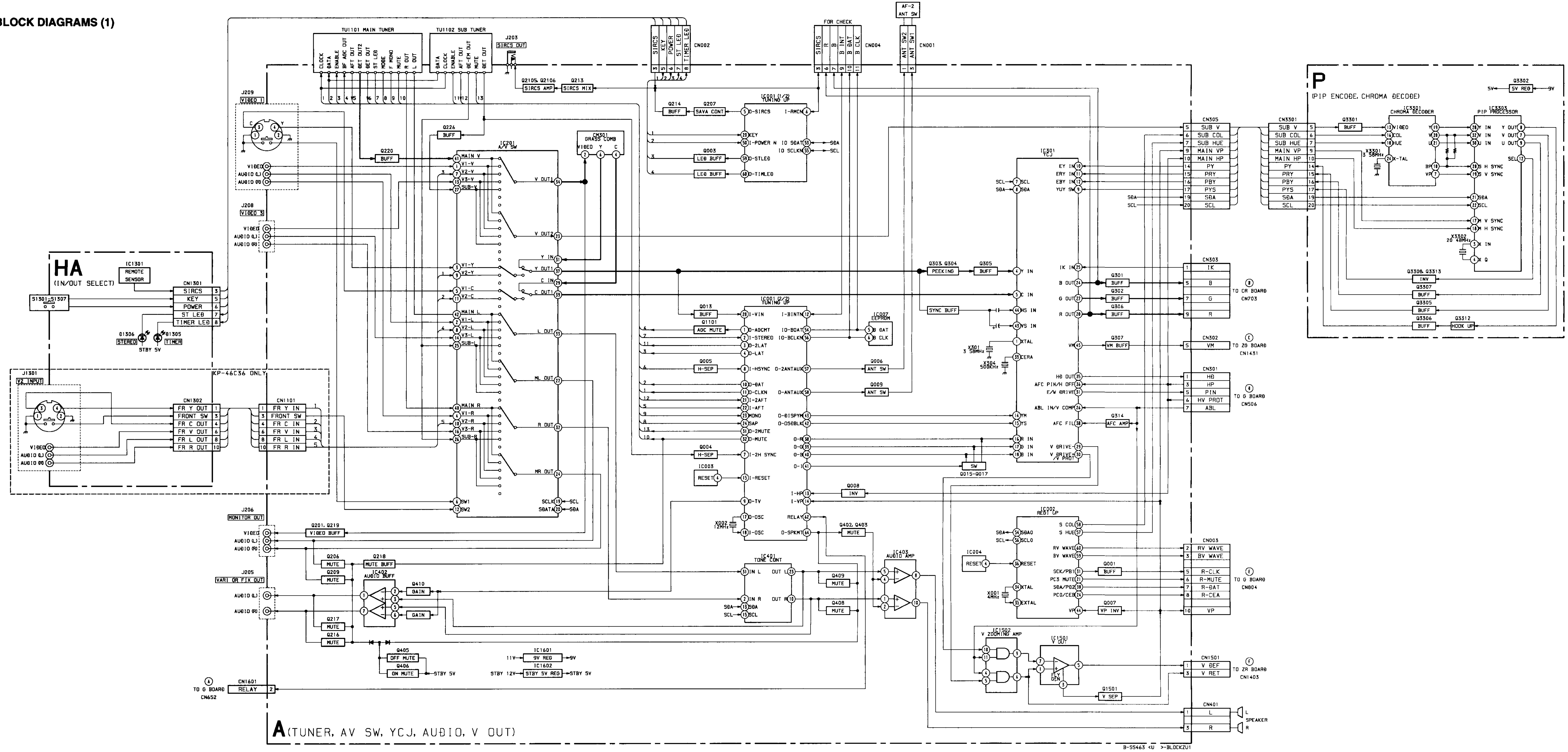
SECTION 5
CIRCUIT ADJUSTMENT

ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
RF AGC 1. Input a color-bar signal. 2. Adjust AGC VR of TU1101 so that snow, noise, and cross-modulation disapper from the picture. 3. Verify picture quality on each channel.				
BER DISPLAY ADJUSTMENT (DISP) 1. Receive cross-hatch signal. 2. Set to Service mode. 3. Select "DISP", and adjust so that the blank spaces on the both sides of picture bar become equal. 4. Write the data into memory. MUTING→ENTER				
SUB-CONTRAST ADJUSTMENT (SCON) 1. Receive the color-bar signal. 2. PICTURE : maximum COLOR : minimum BRIGHTNESS : minimum RON---1 GON---0 BON---0 3. Set to service mode. 4. Connect an oscilloscope between ⑥ pin of CN004 (A Board) and ground. 5. Select "SCON" and adjust so that the wave from level is 1.65±0.1Vp-p. 6. Write the data into memory MUTING→ENTER				

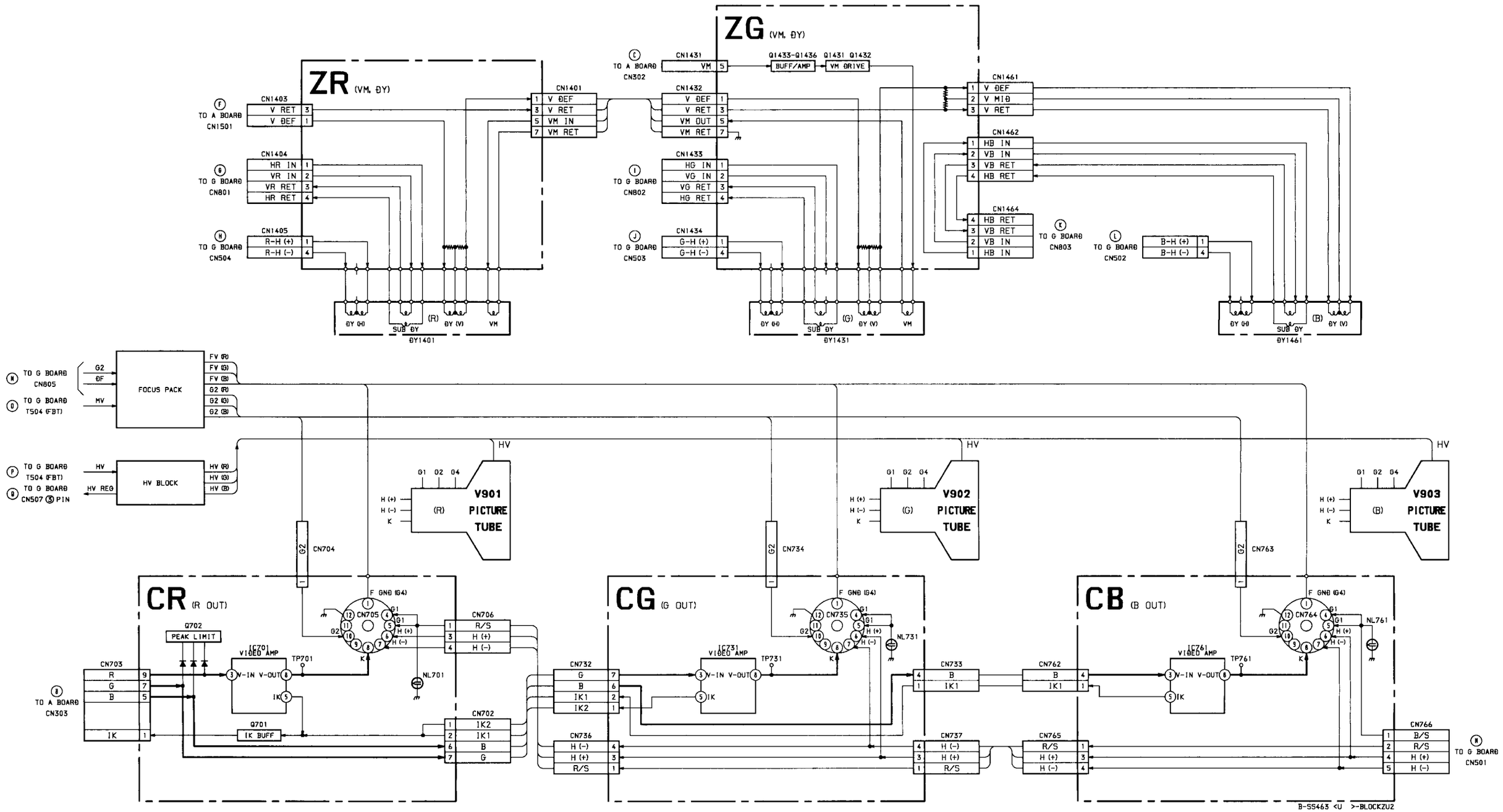
ADJUSTMENT ITEM AND PROCEDURE	EQUIPMENT AND SIGNAL	MEASUREMENT POSITION	ADJUSTMENT LOCATION	ILLUSTRATION AND SHAPE AND NUMBER
SUB-HUE AND SUB-COLOR ADJUSTMENT (SHUE, SCOL) 1. Receive color-ber signal. 2. PICTURE : maximum COLOR : minimum BRIGHTNESS: minimum 3. Set to Service mode. 4. Connect an oscilloscope between ⑦ pin of CN004 (A Board) connecter and ground. 5. Select "SHUE" and "SCOL", and adjust them to have VB1=VB4 and VB2=VB3 in the waveform levels. 6. Raise SCOL data 1 steps higher. 7. Write the data into memory. [MUTING]→[ENTER]				
P IN P ACQUISITION AREA ADJUSTMENT (MAHP, MAVP, SAHP, SAVP) 1. Receive monoscope pattern signal. 2. Set to P IN P (◨) mode, and to Service mode. 3. Check the MAIN/SUB PICTURE position. 4. Select "MAHP", "MAVP" and "SAHP", "SAVP" and adjust H/V position to the specified level. 5. Write the data into memory. [MUTING]→[ENTER]				 H : A=B (sq) V : C=D (sq)

SECTION 6
DIAGRAMS

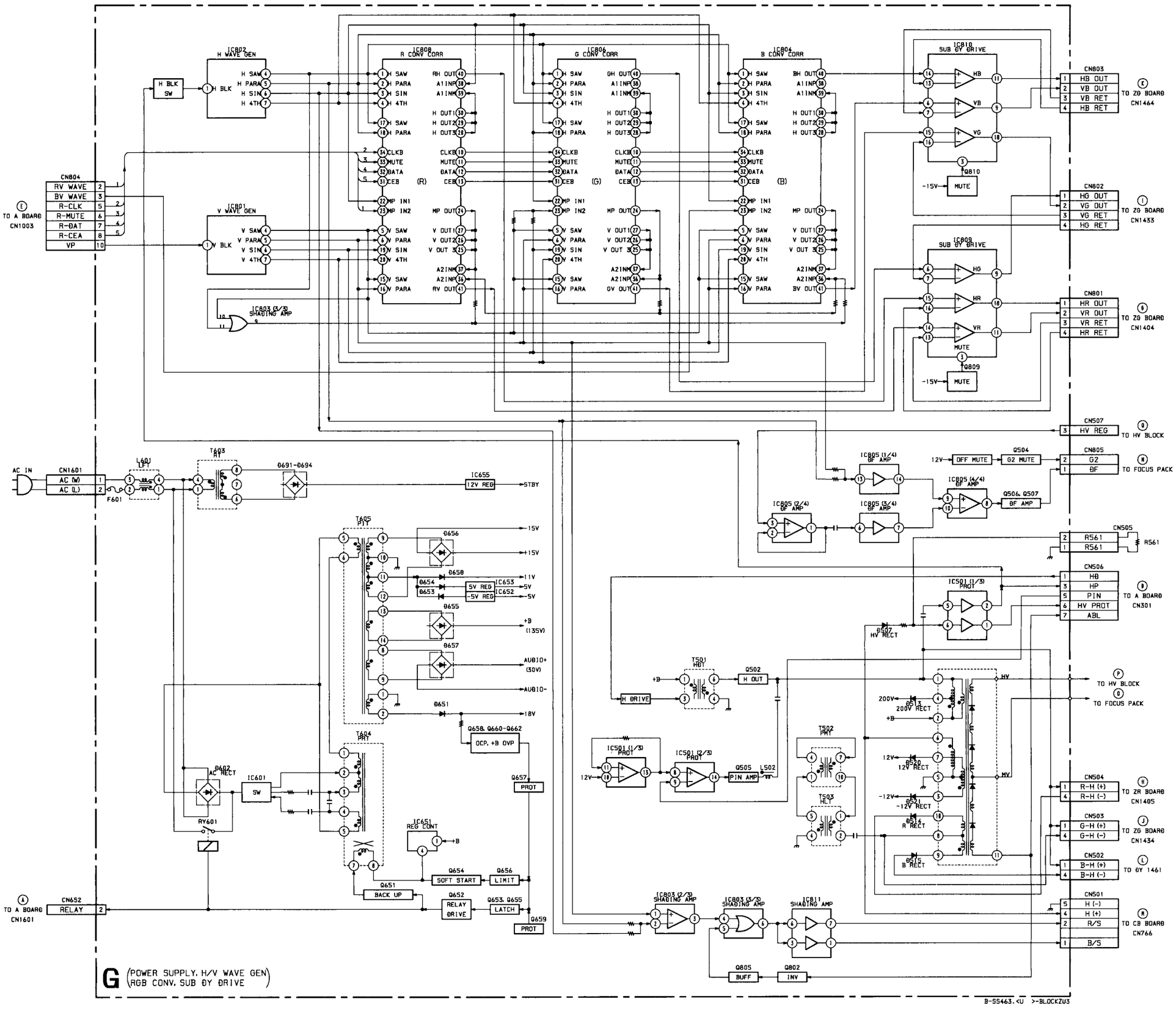
6-1. BLOCK DIAGRAMS (1)



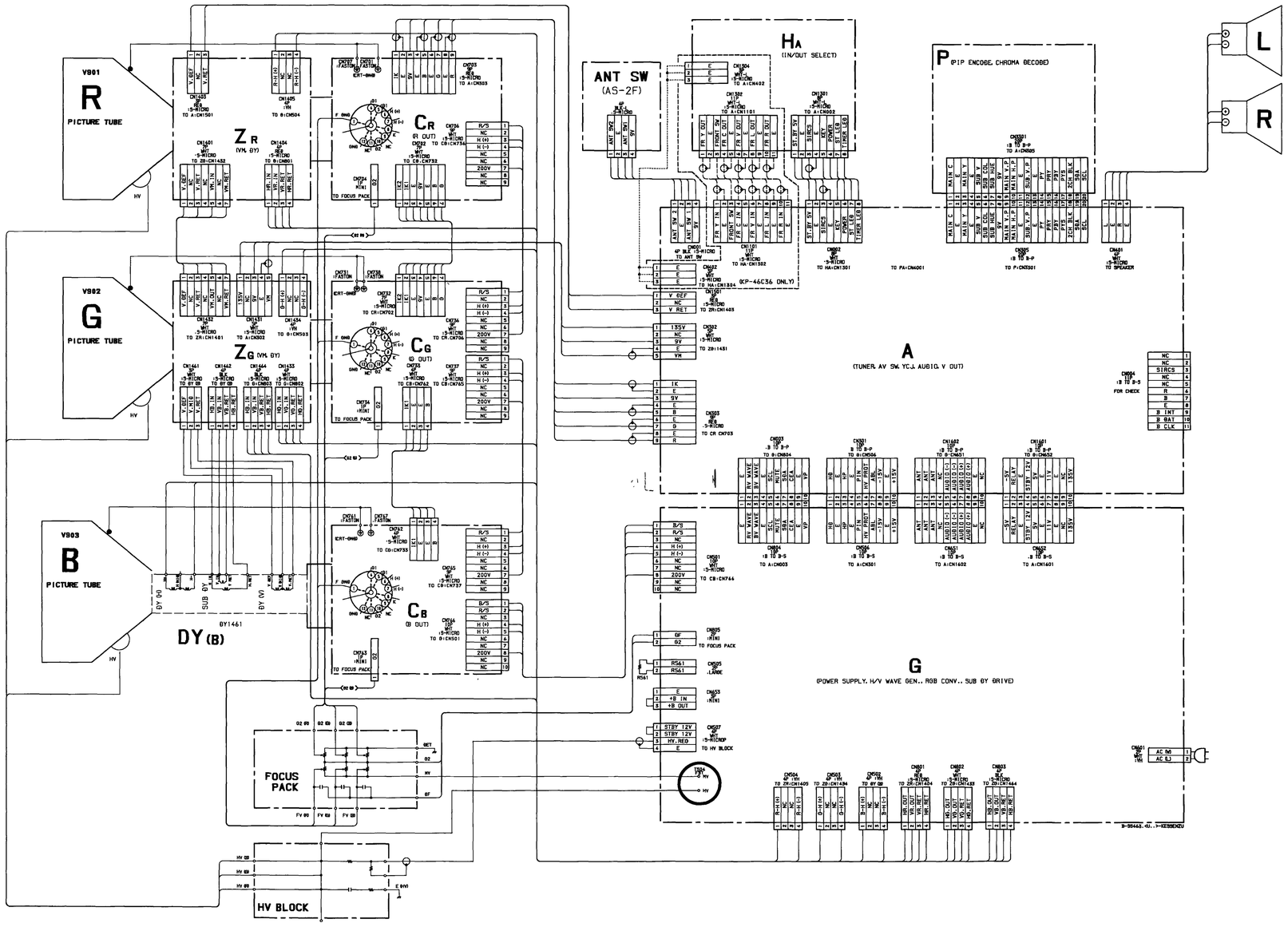
HA
(IN/OUT SELECT)
P
(PIP ENCODE, CHROMA DECODE)
A(TUNER, AV SW, YCJ, AUDIO, V OUT)
KP-46C36 ONLY
TU1101 MAIN TUNER
TU1102 SUB TUNER
J203 SIRCS OUT
IC201 A/V SW
CM301 GRASS COMB
IC001 (1/2) TUNING UP
IC001 (2/2) TUNING UP
IC007 EEPROM
IC301 YCJ
IC002 REGI UP
IC401 TONE CONT
IC402 AUDIO BUFF
IC403 AUDIO AMP
IC1502 V ZOOMING AMP
IC1501 V OUT
IC1601 9V REG
IC1602 STBY 5V REG
IC3301 CHROMA DECODER
IC3303 PIP PROCESSOR
IC1301 REMOTE SENSOR
CN002
CN004 FOR CHECK
CN001
AF-2 ANT SW
CN305
CN3301
CN303
CN302
CN301
CN003
CN1501
CN401
CN1601 RELAY
CN1301
CN1302
CN1101
J209 VIDEO 1
J208 VIDEO 3
J206 MONITOR OUT
J205 VARI OR FIX OUT
J1301 V2 INPUT
TO CR BOARD CN703
TO ZG BOARD CN1431
TO G BOARD CN506
TO G BOARD CN804
TO ZR BOARD CN1403
TO G BOARD CN652
SPEAKER
B-SS463 <U >-BLOCKZU1


ZR (VM, ØY)
ZG (VM, ØY)
CR (R OUT)
CG (G OUT)
CB (B OUT)
FOCUS PACK
HV BLOCK
V901 PICTURE TUBE
V902 PICTURE TUBE
V903 PICTURE TUBE
TO A BOARØ CN1501
TO G BOARØ CN801
TO G BOARØ CN504
TO A BOARØ CN302
TO G BOARØ CN802
TO G BOARØ CN503
TO G BOARØ CN803
TO G BOARØ CN502
TO G BOARØ CN805
TO G BOARØ T504 (FBT)
TO G BOARØ T504 (FBT)
TO G BOARØ CN507 ③ PIN
TO A BOARØ CN303
TO G BOARØ CN501
CN1401
CN1403
CN1404
CN1405
CN1431
CN1432
CN1433
CN1434
CN1461
CN1462
CN1464
CN704
CN734
CN763
CN705
CN735
CN764
CN706
CN702
CN732
CN736
CN733
CN737
CN762
CN765
CN703
CN766
Q1433-Q1436 Q1431 Q1432
BUFF/AMP
VM ØRIVE
Q702
PEAK LIMIT
Q701
IK BUFF
IC701 VIDEO AMP
IC731 VIDEO AMP
IC761 VIDEO AMP
TP701
TP731
TP761
NL701
NL731
NL761
F GNØ (G4)
SUB ØY
ØY1401
ØY1431
ØY1461
B-SS463 <U >-BLOCKZU2

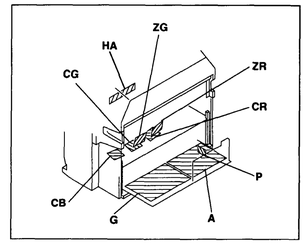
BLOCK DIAGRAMS (3)



6-2. FRAME SCHEMATIC DIAGRAM



6-3. CIRCUIT BOARDS LOCATION



6-4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms.
  kΩ = 1000Ω, MΩ = 1000kΩ
- Indication of resistance, which does not have one for rating electrical power, is as follows

  Pitch: 5 mm
  Rating electrical power: 1/4W
- : nonflammable resistor
- : fusible resistor.
- : internal component.
- : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : earth-chassis.
- The components identified by ⊞ in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
  Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⊞ and repeat the adjustment until the specified value is achieved.
  (Refer to R514, R561 and C514 adjustment on Page 49 to 51)
- When replacing the part in below table, be sure to perform the related adjustment.

Part replaced (◪)	Adjustment (⊞)
C514, C515, C516, IC651, T502, T503, T504, DY	HV Regulator (C514)
C507, C513, D501, D504, D507, IC301, IC501, IC651, R502, R514, R516, R517, R539, R560, R561, T502, T503, T504, DY	HV HOLD-DOWN (R514, R561)

- As to the voltage value shown by the semiconductors on the Schematic Diagram, see the another list.
- Readings are taken with a color-bar signal input.
- Readings are taken with a 10MΩ digital multimeter.
- Voltages are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V
- : Measurement impossibility.
- Circled numbers are waveform reference
- B + line
- B – line
- signal path (RF)

Note: The symbol ⚠ display is on the component side.

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

The symbol ⊞ indicate fast operating fuse. Replace only with fuse of same rating as marked.

Note: Les composants identifiés par un tramé et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Le symbole ⊞ indique une fusible a action rapide. Doit etre remplacee par une fusible de meme valeur, comme maque.

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFRAMMABLE CARBON
	: FUSE	NONFRAMMABLE FUSIBLE
	: RW	NONFRAMMABLE WIREWOUND
	: RS	NONFRAMMABLE METAL OXIDE
	: RB	NONFRAMMABLE CEMENT
	: ※	ADJUSTMENT RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

Terminal name of semiconductors in silk screen printed circuit (*)

	Device	Printed symbol	Terminal name	Circuit
①	Transistor	T	Collector / Base / Emitter	
②	Transistor	—	Collector / Base / Emitter	
③	Diode		Cathode / Anode	
④	Diode	T	Cathode / Anode (NC)	
⑤	Diode	—	Cathode / Anode (NC)	
⑥	Diode	T	Common Anode / Cathode	
⑦	Diode	—	Common Anode Cathode	
⑧	Diode	T	Common Anode / Anode	
⑨	Diode	—	Common Anode Anode	
⑩	Diode	T	Common Cathode / Cathode	
⑪	Diode	—	Common Cathode Cathode	
⑫	Transistor (FET)		Drain / Source / Gate	
⑬	Transistor (FET)		Drain / Source / Gate	
⑭	Transistor (FET)		D / S / G	
⑮	Transistor	—	C1B1E1 / C2B2E2	
⑯	Transistor	—	C1B2E2 / C2B1E1	
⑰	Transistor	—	C1 B2 E2 / B1 E1 C2	
⑱	Transistor	—	C1 B2 E2 / B1 E1 C2	
⑲	Transistor	—	E2 B1 E1 / C2 C1(B)	
⑳	Transistor	—	B1 E1 E2 / C1 C2	
㉑	Transistor	—	B1 E1 E1 / C2 C1	
–	Discrete semiconductor			

(Chip semiconductors that are not actually used are included.)

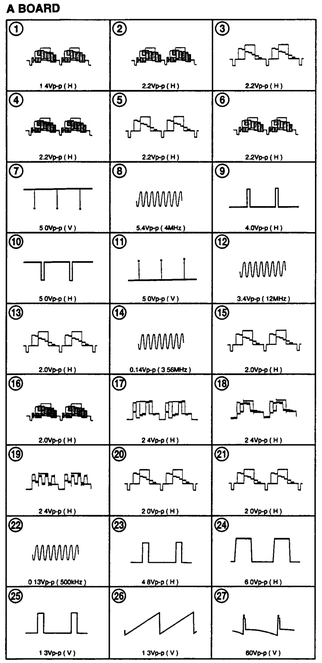
A BOARD

REF	Pin No.	VOLTAGE	REF.	Pin No.	VOLTAGE	REF	Pin No.	VOLTAGE	REF.	Pin No.	VOLTAGE
IC001	①	0	IC001	①	4.7	IC007	①	5.0	IC401	①	5.1
	②	0		②	4.7		②	4.9		②	GND
	③	0		③	4.7		③	4.2		③	0
	④	0		④	8.8		④	4.9		④	4.4
	⑤	0		⑤	0		⑤	4.2		⑤	4.9
	⑥	4.8		⑥	3.7		⑥	4.8		⑥	5.0
	⑦	0		⑦	0		⑦	4.7		⑦	5.0
	⑧	0		⑧	0		⑧	5.0		⑧	8.7
	⑨	4.4		⑨	4.1		⑨	4.2		⑨	4.4
	⑩	0		⑩	0		⑩	5.0		⑩	6.5
	⑪	0		⑪	4.4		⑪	4.2		⑪	0.8
	⑫	4.9		⑫	4.9		⑫	4.8		⑫	8.7
	⑬	4.3		⑬	4.7		⑬	4.7		⑬	0.8
	⑭	0		⑭	4.8		⑭	4.8		⑭	1.5
	⑮	4.9		⑮	0		⑮	4.2		⑮	1.5
	⑯	GND		⑯	4.9		⑯	GND		⑯	5.4
	⑰	2.4		⑰	2.4		⑰	4.2	IC402	①	0.6
	⑱	2.1		⑱	2.1		⑱	GND		②	2.9
	⑲	0		⑲	4.9		⑲	GND		③	3.0
	⑳	4.9		⑳	GND		⑳	4.8		④	4.2
	㉑	2.3		㉑	GND		㉑	4.8		⑤	4.6
	㉒	2.4		㉒	GND	IC201	①	GND		⑥	4.3
	㉓	0		㉓	GND		②	6.9		⑦	3.4
	㉔	GND		㉔	GND		③	4.8		⑧	3.4
IC002	①	1.8		①	4.2		④	4.2	IC403	①	4.1
	②	2.6		②	GND		⑤	4.2		②	4.1
	③	2.2		③	GND		⑥	2.3		③	2.3
	④	5.0		④	4.8		⑦	GND		④	GND
	⑤	1.9		⑤	4.8		⑧	4.2		⑤	2.7
	⑥	0		⑥	2.2		⑨	2.7		⑥	4.3
	⑦	0		⑦	2.8		⑩	3.9		⑦	3.9
	⑧	0		⑧	2.2		⑪	3.9		⑧	4.2
	⑨	0		⑨	2.2		⑫	5.1	IC501	①	5.7
	⑩	0		⑩	GND		⑬	GND		②	GND
	⑪	0		⑪	GND		⑭	4.3		③	GND
	⑫	0		⑫	4.4		⑮	GND		④	GND
	⑬	0		⑬	4.9		⑯	4.4		⑤	GND
	⑭	0		⑭	8.9		⑰	3.5		⑥	4.4
	⑮	0		⑮	GND		⑱	3.5		⑦	4.4
	⑯	0		⑯	3.5		⑲	5.2		⑧	4.4
IC003	①	0		⑰	4.4		⑳	6.6		⑨	4.4
	②	0		⑱	3.5		㉑	1.8		⑩	4.4
	③	0		⑲	5.2		㉒	4.5		⑪	4.4
	④	4.9		⑳	5.0		㉓	4.2	IC502	①	0
	⑤	0		㉑	4.2		㉔	4.3		②	0
	⑥	GND		㉒	2.1					③	4.4
IC004	①	2.7		㉓	5.6					④	4.4
	②	2.7		㉔	4.9					⑤	4.4
	③	4.9	IC401	①	4.4					⑥	4.4
	④	4.9		②	9.0					⑦	4.4
	⑤	GND		③	3.5					⑧	4.4
IC301	①	GND		④	8.8					⑨	4.4
	②	GND		⑤	4.8					⑩	4.4
	③	GND		⑥	4.8					⑪	4.4
	④	4.7		⑦	4.8					⑫	4.4
	⑤	0		⑧	0					⑬	4.4
	⑥	4.8		⑨	6.4					⑭	4.4
	⑦	4.7		⑩	6.1					⑮	4.4
										⑯	5.1
										⑰	4.4
										⑱	4.4
										⑲	4.4
										⑳	4.4
										㉑	4.4
										㉒	3.1
										㉓	1.4
										㉔	0
									IC402	①	0.2
										②	28.2
										③	6.1
										④	GND
										⑤	1.2
										⑥	14.4
										⑦	-14.0
										⑧	-15.4
									IC501	①	0.8
										②	14.5
										③	1.2
										④	-0.3
										⑤	0
										⑥	0
										⑦	0
										⑧	GND
										⑨	0
									IC502	①	0
										②	0
										③	0
										④	GND
									IC1601	①	GND
										②	4.0
										③	11.9
									IC1602	①	GND
										②	5.0

A BOARD

REF	VOLTAGE	REF	VOLTAGE	REF	VOLTAGE	REF.	VOLTAGE
Q001	E GND	Q213	E 5.0	Q312	E 5.1	Q402	E 0
	C 4.8		C 0.3		C 8.8		B 3.6
	B 0		B 4.9		B 5.7	Q403	E 26.3
Q002	E 2.0	Q214	E 5.0	Q313	E 4.8		C 26.2
	C GND		C 4.9		C 7.7		B 13.2
	B 0		B 5.0		B 5.3	Q404	E 11.9
Q003	E GND	Q216	E GND	Q314	E 0.9		C -1.3
	C GND		C 0		C 4.5		B 11.8
	B 3.8		B 5.0		B 1.5	Q405	E 11.8
Q004	E 4.9	Q217	E GND	Q402	E GND		C -1.3
	C 1.0		C 0		C 0		B 11.9
	B 5.4		B 0		B 3.6	Q406	C GND
Q005	E 4.9	Q218	E 0	Q403	E 26.3		E 0
	C 0.7		C 8.9		C 26.2	Q408	C GND
	B 4.9		B 0		B 13.2		B 3.6
Q006	E 8.9	Q219	E 4.5	Q404	E 11.9	Q409	C GND
	C 0		C 5.2		C -1.3		B 0.6
	B 8.8		B 5.1	Q405	E 11.8	Q410	E GND
Q007	E GND	Q220	E 4.4		C -1.3		C 0
	C 4.8		C 9.0		B 11.9		B 4.1
	B 0.1		B 4.8	Q406	C GND	Q411	E GND
Q008	E GND	Q226	E 4.4		E 0		C 4.1
	C 4.3		C 9.4	Q408	C GND		B 0
	B 0.1		B 5.1		B 3.6	Q1101	E GND
Q009	E 5.3	Q301	E 1.3	Q409	C GND		C 4.1
	C 4.8		C GND		B 0.6		B 0
	B 0		B 0.9	Q410	E GND	Q1501	E 5.1
Q013	E 3.7	Q302	E 1.5		C 0		C 14.4
	C 5.0		C GND		B 4.1		B -0.4
	B 4.3		B 0.9	Q411	E GND	Q2105	E GND
Q015	E GND	Q303	E 3.8		C 4.1		C 0
	C 0		C 8.8		B 0		B 0.6
	B -0.2		B 4.4	Q1101	E GND	Q2106	E 0.2
Q016	E GND	Q304	E 3.5		C 4.1		C 5.0
	C 0		C 8.6		B 0		B 0.2
	B -0.2		B 3.9	Q1501	E 5.1		
Q017	E GND	Q305	E 1.8		C 14.4		
	C 0		C 9.2		B -0.4		
	B -0.2		B 6.6	Q2105	E GND		
Q201	E 1.8	Q306	E 1.8		C 0		
	C 4.5		C GND		B 0.6		
	B 1.5		B 5.3	Q2106	E 0.2		
Q206	E GND	Q307	E 4.3		C 5.0		
	C 0		C 8.8		B 0.2		
	B 0		B 5.0				
Q207	E GND	Q308	E 5.1				
	C 5.3		C GND				
	B 0		B 4.5				
Q209	E GND	Q311	E 5.1				
	C 0		C 8.8				
	B 0		B 4.2				

A BOARD

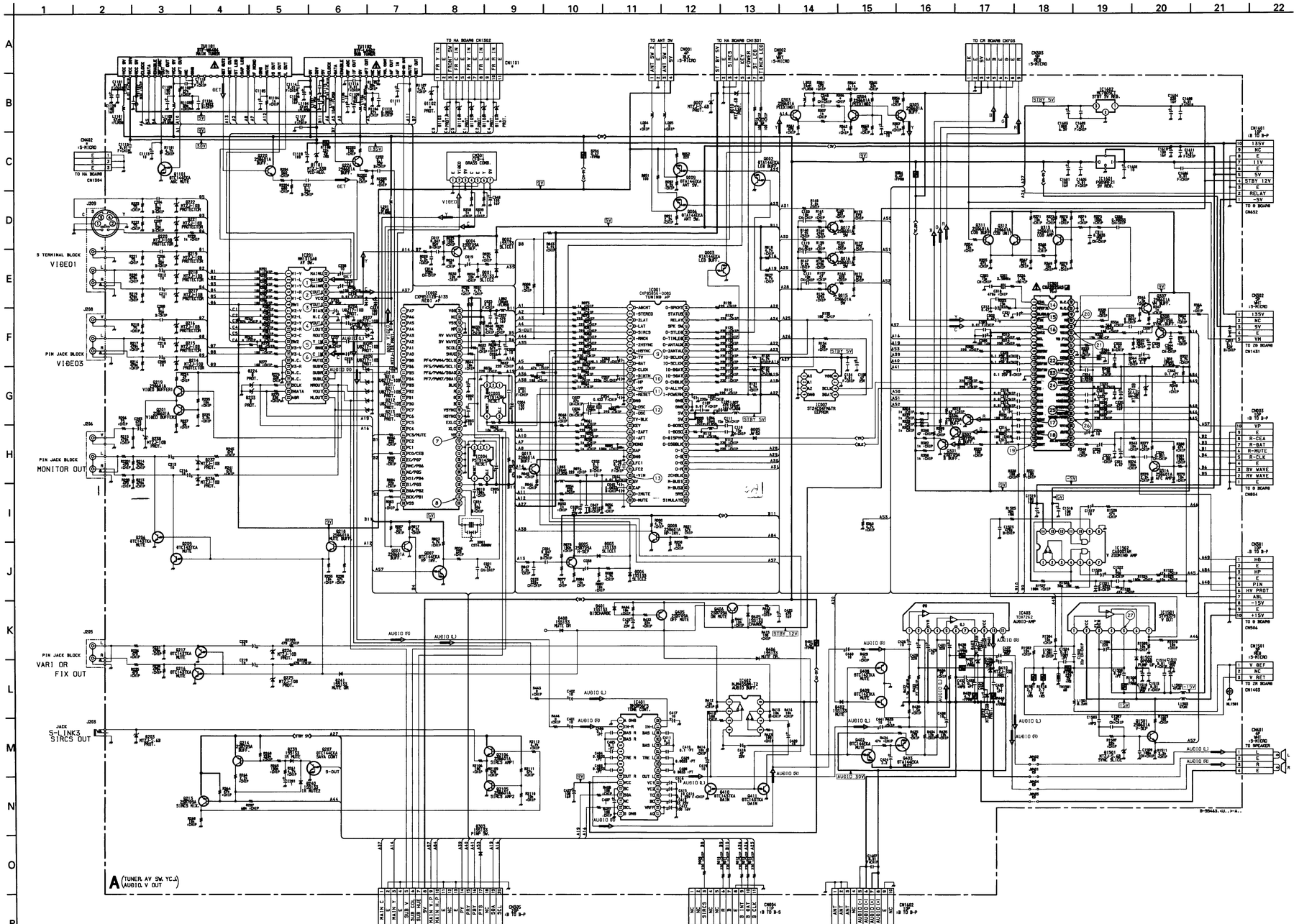


A BOARD * MARK LIST

	KP-48S35/53S35/ 61S35	KP-46C36
CN402	#	3P WHT ;S-MICRO
CN1101	#	11P WHT ;S-MICRO
D1102	#	UDZ 17-10B
D1103	#	UDZ 17-10B
D1104	#	UDZ 17-10B
D1105	#	UDZ 17-10B
D1106	#	UDZ 17-10B
D1107	#	UDZ 17-10B
R262	#	82k ;CHIP
R280	#	470 ;CHIP
R281	#	470 ;CHIP
R282	#	470 ;CHIP
R283	#	470 ;CHIP
R284	#	470 ;CHIP
R285	#	470 ;CHIP

Mark : not mounted

Schematic diagram
A board ➡


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
A B C D E F G H I J K L M N O P
TO HA BOARD CN1502
TO ANT SW
TO HA BOARD CN1501
TO CR BOARD CN703
CN1101
CN402
TO HA BOARD CN1504
VIDEO1
S TERMINAL BLOCK
VIDEO3
PIN JACK BLOCK
MONITOR OUT
VARI OR FIX OUT
S-LINK3 SIRCS OUT
STBY 5V
STBY 12V
AUDIO 5V
AUDIO RI
AUDIO LI
TO P BOARD CN5301
FOR CHECK
TO S BOARD CN451
TO ZD BOARD CN1451
TO ZD BOARD CN804
TO G BOARD CN504
TO ZR BOARD CN1443
TO SPEAKER
A (TUNER, AV SW, YC.) (AUDIO, V OUT)

A BOARD

IC

IC001	F–7	
IC002	F–4	
IC003	E–6	
IC004	G–4	
IC007	G–6	
IC201	C–5	
IC301	F–8	
IC401	C–3	
IC402	C–4	
IC403	C–1	
IC1501	F–2	
IC1502	G–3	
IC1601	D–1	
IC1602	D–2	

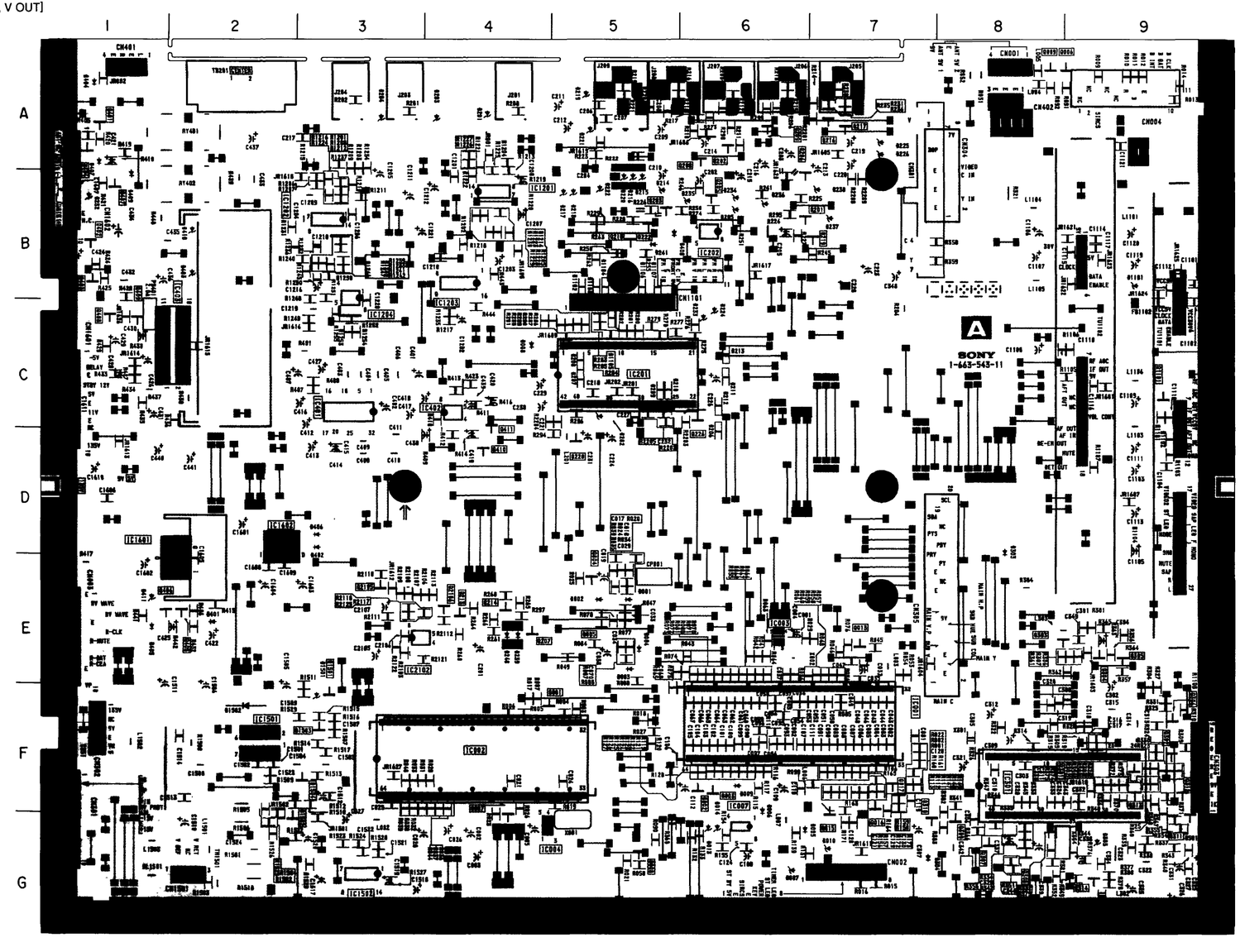
TRANSISTOR

Q001	F–5	① *
Q002	F–6	①
Q003	F–6	①
Q004	E–5	①
Q005	E–5	①
Q006	A–8	①
Q007	G–4	①
Q008	G–5	①
Q009	A–8	①
Q013	E–7	①
Q015	F–7	①
Q016	F–7	①
Q017	F–7	①
Q201	B–6	①
Q206	B–6	①
Q207	E–4	①
Q209	A–6	①
Q213	E–4	①
Q214	E–4	①
Q216	A–7	①
Q217	A–7	①
Q218	B–5	①
Q219	B–7	①
Q220	C–5	①
Q226	C–6	①
Q301	F–9	①
Q302	F–9	①
Q303	E–8	①
Q304	E–9	①
Q305	E–9	①
Q306	F–9	①
Q307	G–8	①
Q308	G–8	①
Q711	G–9	①
Q712	F–9	①
Q713	F–9	①
Q714	G–9	①
Q402	B–1	①
Q403	B–1	①
Q405	E–2	①
Q406	E–1	①
Q408	C–1	①
Q409	C–1	①
Q410	D–4	①
Q411	D–4	①
Q1101	C–9	①
Q1501	F–3	①
Q2105	E–3	①
Q2106	E–4	①

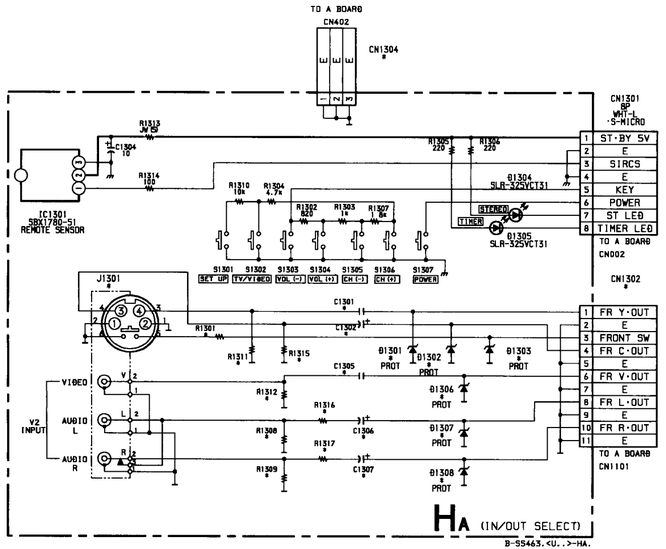
DIODE

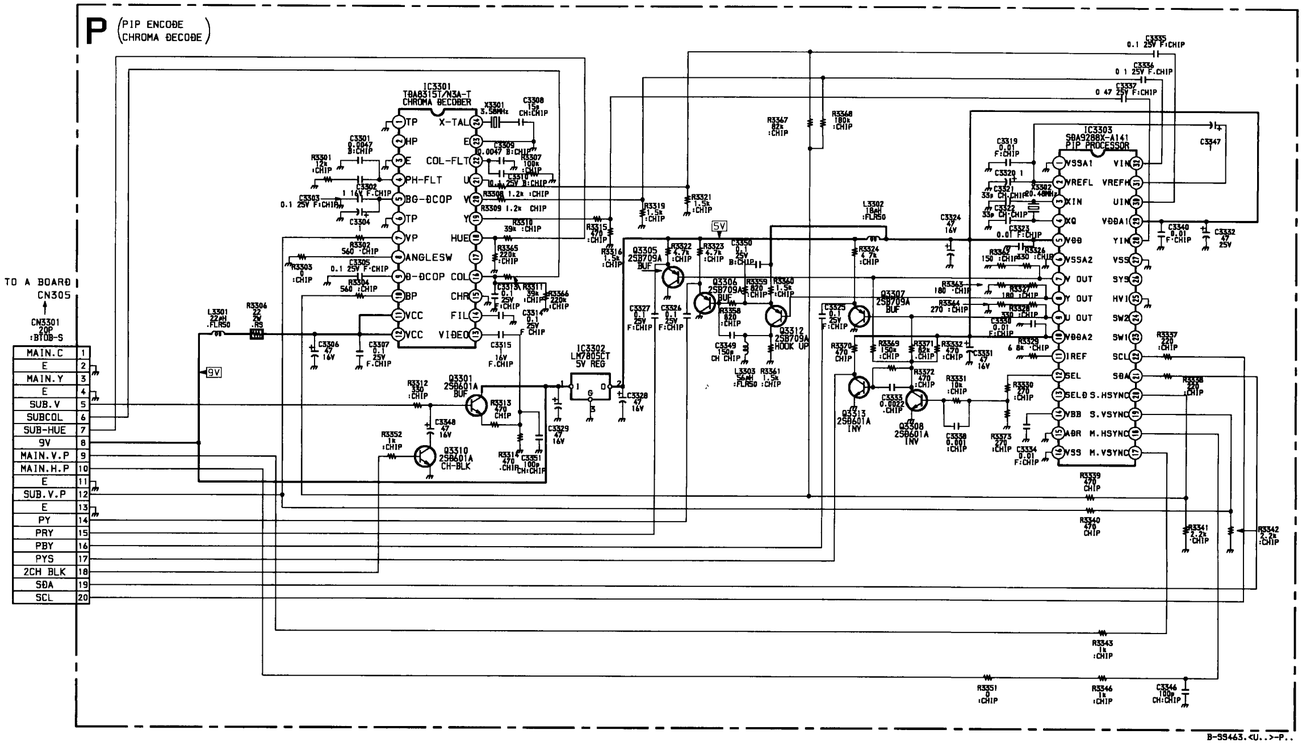
D001	E–5	* –
D002	E–5	–
D003	E–5	–
D004	E–5	–
D007	G–6	–
D010	G–7	–
D202	C–5	–
D203	A–4	–
D206	C–6	③
D207	C–5	③
D208	C–5	③
D209	C–5	③
D210	C–5	③
D211	C–6	③
D212	C–6	③
D213	C–6	③
D214	B–5	–
D215	B–5	–
D216	B–5	–
D217	B–5	–
D218	B–5	–
D219	A–5	–
D220	B–5	–
D221	A–5	–
D222	B–5	–
D225	A–7	–
D226	A–7	–
D232	B–1	–
D236	B–6	–
D237	B–7	–
D238	B–7	–
D239	E–4	–
D240	E–4	–
D241	B–5	–
D303	D–8	–
D305	G–9	–
D401	E–2	–
D402	D–3	–
D403	B–2	–
D405	E–1	–
D406	D–3	–
D408	B–6	–
D410	B–2	–
D1101	B–9	–
D1102	B–5	⑤
D1103	B–5	⑤
D1104	B–5	⑤
D1105	C–5	⑤
D1106	B–5	⑤
D1107	B–5	⑤
D1501	F–3	–
D1502	F–3	–

– A BOARD –



Schematic diagrams
HA, P boards ➡





P BOARD

REF.		VOLTAGE
Q3301	E	6.3
	C	8.9
	B	6.9
Q3305	E	1.0
	C	GND
	B	0.4
Q3306	E	1.3
	C	GND
	B	0.7
Q3307	E	1.1
	C	GND
	B	0.5
Q3308	E	GND
	C	2.9
	B	0
Q3310	E	GND
	C	6.5
	B	-0.4
Q3312	E	0.6
	C	0
	B	0
Q3313	E	GND
	C	0
	B	0.8

P BOARD

REF.	Pin No.	VOLTAGE
IC3301	1	GND
	3	GND
	4	3.8
	5	6.6
	6	GND
	7	0.1
	8	0
	9	1.7
	10	0.3
	11	7.9
	12	7.9
	13	4.3
	14	0
	15	GND
	16	0.1
	17	2.2
	18	4.2
	20	2.9
	21	2.8
	22	4.6
	23	GND
	24	2.7
IC3302	1	8.9
	G	GND
	O	5.1
IC3303	1	GND
	2	3.0
	3	2.4
	4	2.2
	5	5.0
	6	GND
	7	0.4
	8	0
	9	0.5
	10	5.0
	11	1.9
	12	0
	14	-2.9
	15	GND
	16	GND
	17	0.1
	18	0.7
	19	0.1
	20	0.2
	21	4.8
	22	4.8
	25	GND
	27	GND
	28	1.4
	29	5.0
	30	2.3
	31	4.0
	32	2.3

HA BOARD * MARK LIST

	KP-48S35/53S35/ 61S35	KP-46C36
C1301	#	0.1 :PT
C1302	#	0.47
C1305	#	0.1 :PT
C1306	#	10
C1307	#	10
CN1302	#	11P WHT-L :S-MICRO
CN1304	#	3P WHT-L :S-MICRO
D1301	#	MTZJ-10
D1302	#	MTZJ-10
D1303	#	MTZJ-10
D1306	#	MTZJ-10
D1307	#	MTZJ-10
D1308	#	MTZJ-10
J1301	#	TERMINAL BLOCK ,S
R1301	#	4.7k
R1308	#	470k
R1309	#	470k
R1311	#	75
R1312	#	75
R1315	#	75
R1316	#	JW (5)
R1317	#	JW (5)

Mark : not mounted

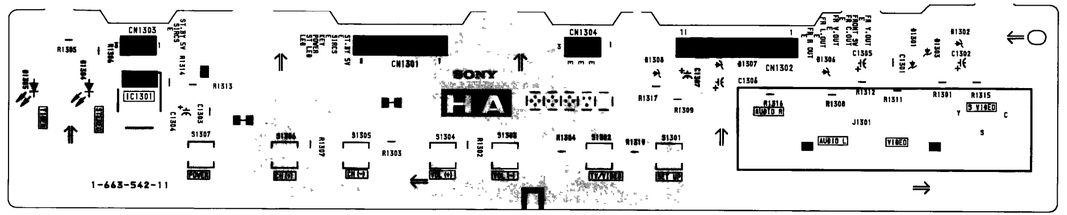
HA BOARD

REF.	Pin No.	VOLTAGE
IC1301	1	5.0
	2	5.0
	3	GND

HA [IN/OUT SELECT]

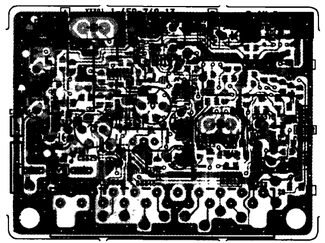
– HA BOARD –

• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

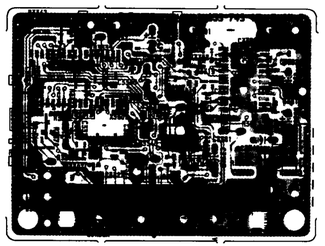


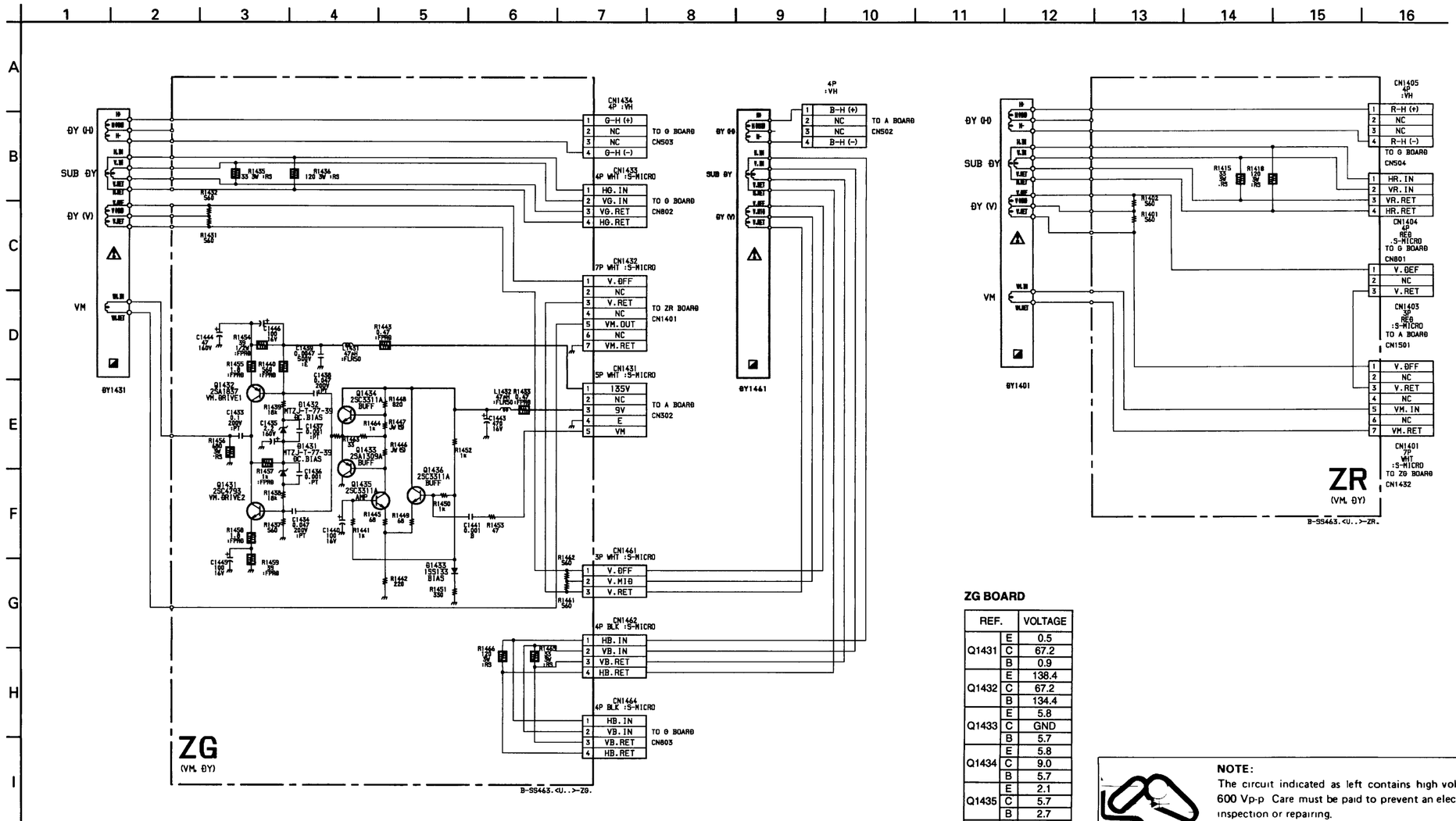
P [PIP ENCODE, CHROMA DECODE]

– P BOARD – <Component Side>



<Conductor Side>





ZG BOARD

REF.		VOLTAGE
Q1431	E	0.5
	C	67.2
	B	0.9
Q1432	E	138.4
	C	67.2
	B	134.4
Q1433	E	5.8
	C	GND
	B	5.7
Q1434	E	5.8
	C	9.0
	B	5.7
Q1435	E	2.1
	C	5.7
	B	2.7
Q1436	E	2.1
	C	9.0
	B	2.7

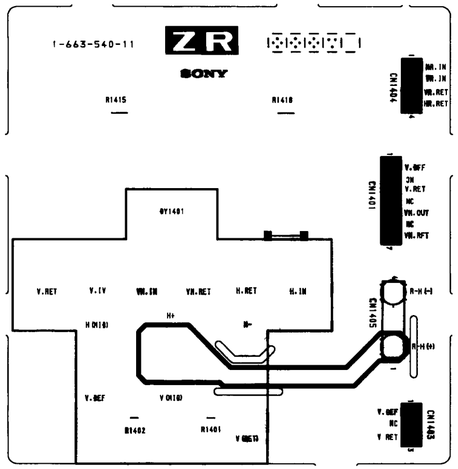
NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p Care must be paid to prevent an electric shock in inspection or repairing.

Schematic diagrams
← ZG, ZR boards

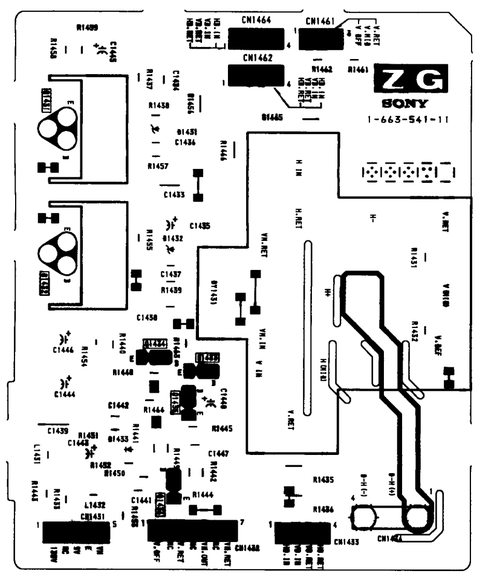
ZR [VM, DY]

ZG [VM, DY]

– ZR BOARD –



– ZG BOARD –

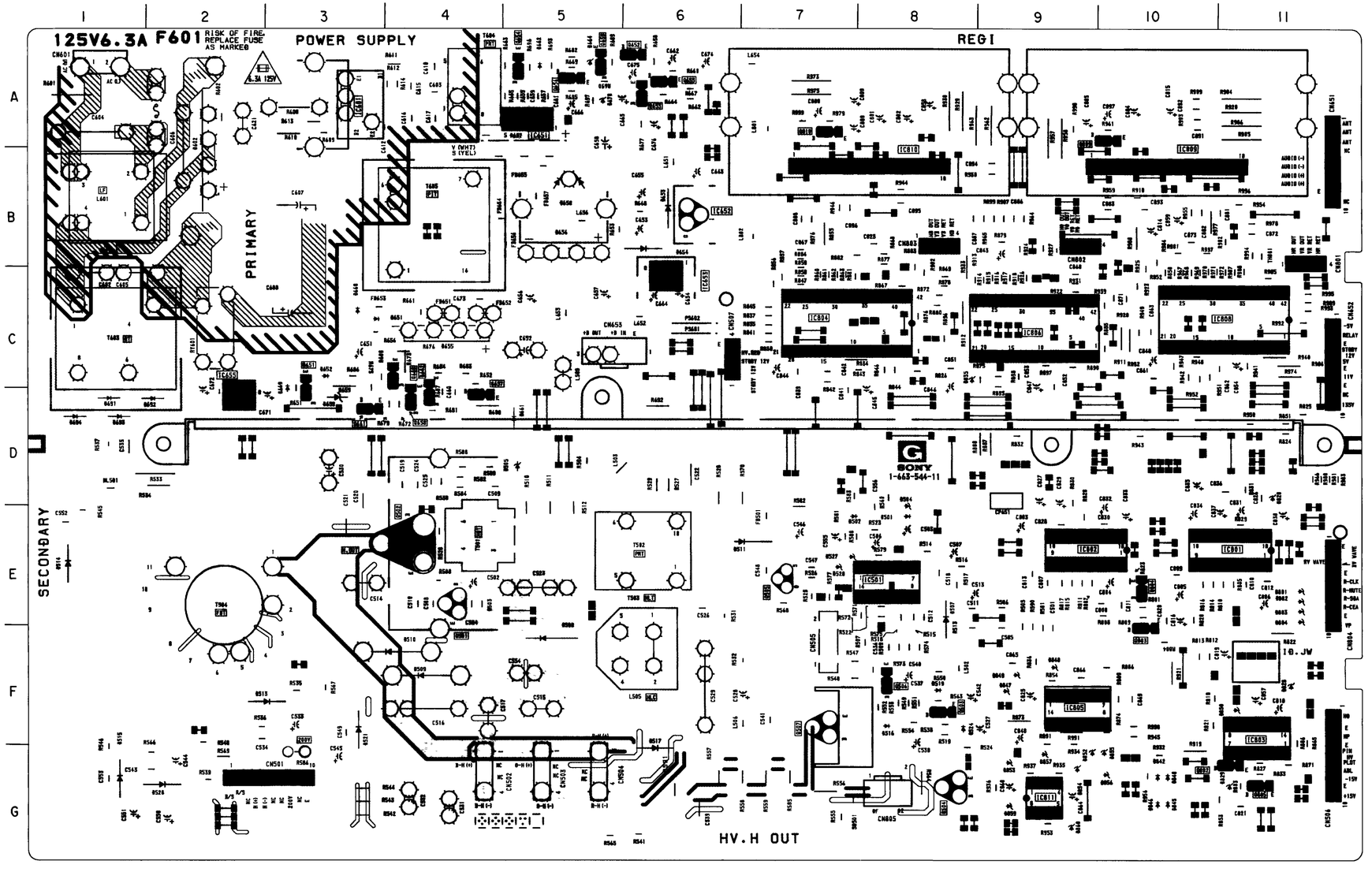


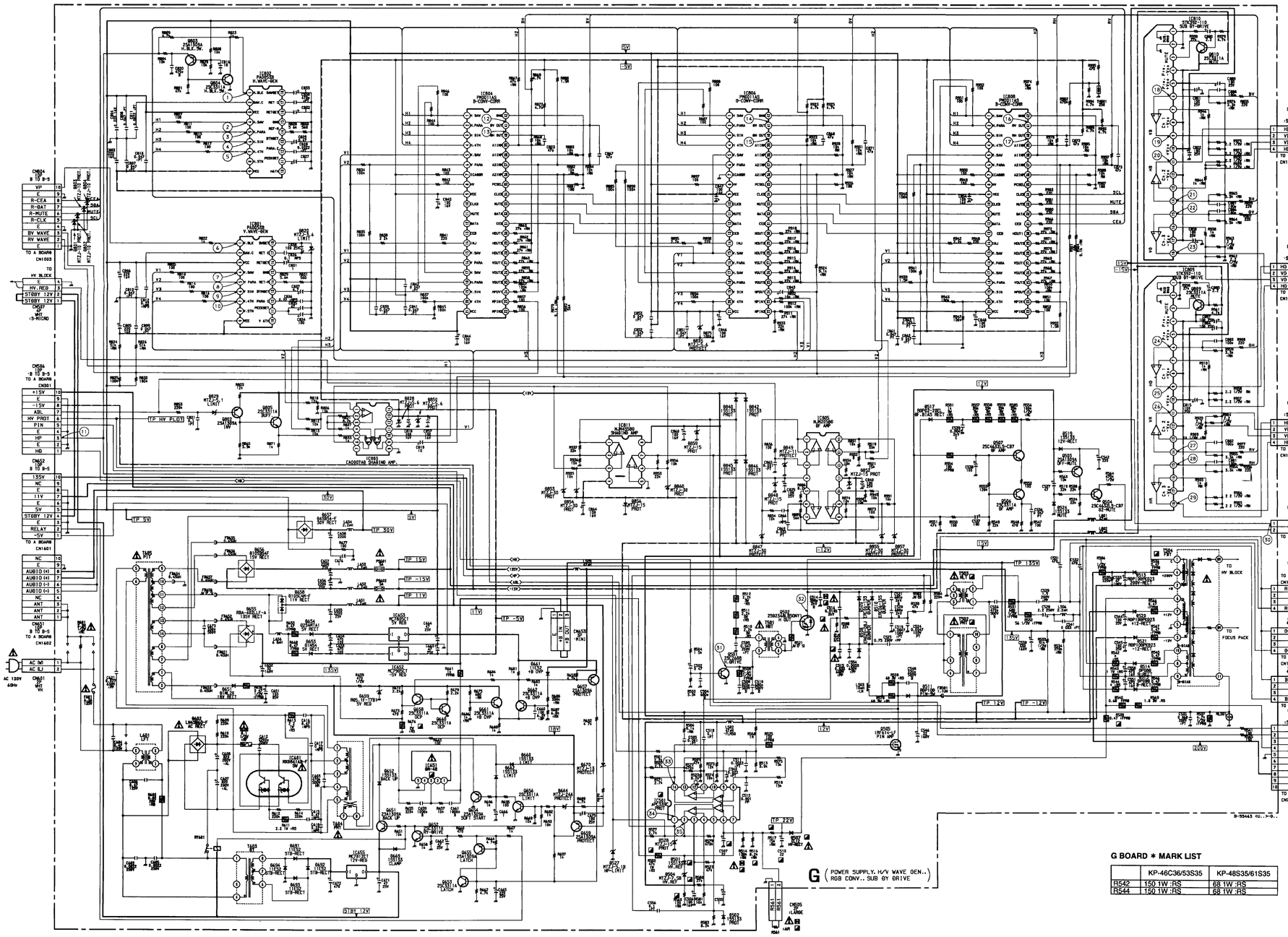
– G BOARD –

G BOARD

IC	
IC501	E–8
IC601	A–3
IC651	A–5
IC652	B–6
IC653	C–6
IC655	C–2
IC801	E–11
IC802	E–9
IC803	F–11
IC804	C–7
IC805	F–9
IC806	C–9
IC808	C–11
IC809	B–10
IC810	B–8
IC811	G–9
TRANSISTOR	
Q501	E–4
Q502	E–4
Q503	F–8
Q504	G–8
Q505	E–7
Q506	F–8
Q507	F–7
Q651	C–3
Q652	A–6
Q653	A–6
Q654	A–5
Q655	A–6
Q656	A–5
Q657	D–4
Q658	D–4
Q659	A–5
Q660	C–4
Q661	D–3
Q662	C–4
Q802	G–11
Q803	F–10
Q804	E–10
Q805	G–11
Q809	A–10
Q810	A–7
DIODE	
D501	E–8
D502	E–8
D504	D–8
D507	E–8
D508	F–5
D509	F–4
D510	F–4
D511	E–7
D513	F–2
D514	E–1
D515	G–1
D517	G–6
D519	F–8
D520	G–2
D521	F–3
D524	F–8
D527	E–7
D528	E–7
D602	A–2
D651	C–3
D652	C–3
D653	B–6
D654	B–6
D655	C–4
D656	B–5
D657	A–5
D658	B–5
D659	D–3
D660	C–3
D661	D–5
D662	A–5
D664	A–5
D669	C–3
D670	A–5
D691	D–1
D692	D–2
D693	D–1
D694	D–1
D801	E–11
D802	E–11
D803	E–11
D804	E–11
D820	D–11
D828	F–11
D829	G–11
D835	C–8
D840	G–10
D842	G–10
D845	G–10
D846	G–10
D847	F–9
D848	F–9
D849	F–9
D850	F–11
D852	G–9
D853	G–9
D854	G–9
D855	G–10
D856	G–10
D857	G–9
D859	G–9
D860	G–9

NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p Care must be paid to prevent an electric shock in inspection or repairing.





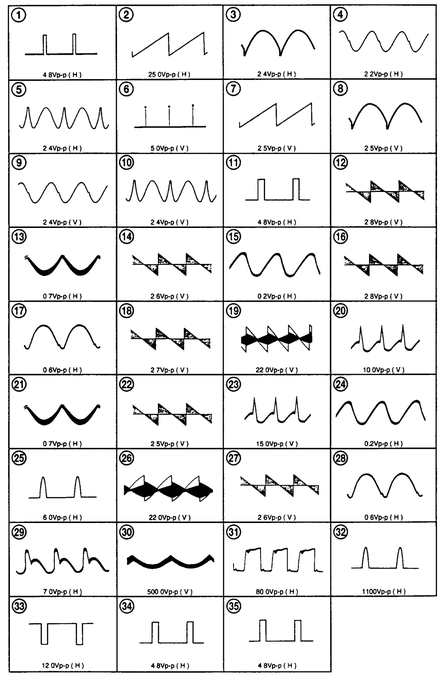
G BOARD

REF	Pin No.	VOLTAGE	REF	Pin No.	VOLTAGE	REF	Pin No.	VOLTAGE	REF	Pin No.	VOLTAGE	REF	Pin No.	VOLTAGE
IC501	①	3.4	IC802	①	0	IC804	①	0.1	IC806	①	0	IC808	①	0
	②	0.7		②	0.9		②	4.9		②	0		②	0
	③	12.1		③	0		③	4.8		③	0.4		③	-0.2
	④	3.3		④	-1.0		④	0		④	4.7		④	0.4
	⑤	1.8		⑤	-5.1		⑤	0		⑤	0.1		⑤	GND
	⑥	7.9		⑥	0		⑥	4.9		⑥	0		⑥	GND
	⑦	8.1		⑦	-0.9		⑦	4.8		⑦	0		⑦	GND
	⑧	1.4		⑧	0.3		⑧	0		⑧	0		⑧	-14.3
	⑨	2.2		⑨	1.2		⑨	0		⑨	0		⑨	-15.3
	⑩	5.5		⑩	GND		⑩	0.2		⑩	0		⑩	14.5
	⑪	1.8		⑪	-1.9		⑪	GND		⑪	0		⑪	-0.1
	⑫	GND		⑫	-1.1		⑫	7.2		⑫	0		⑫	-0.1
	⑬	1.4		⑬	-0.4		⑬	7.0		⑬	0.1		⑬	-15.3
	⑭	9.9		⑭	-0.4		⑭	12.1		⑭	GND	IC809	⑭	-0.2
IC601	①	GND		⑮	-0.3		⑮	0		⑮	0		⑮	14.5
	②	-1.9		⑯	-0.3		⑯	0		⑯	0.9		⑯	15.3
	③	136.0		⑰	-0.3		⑰	0		⑰	0		⑰	0.3
	④	274.0		⑱	1.6	IC805	①	-0.8		⑱	-1.0		⑱	0.3
	⑤	136.0	IC803	⑲	0.3		②	0		⑲	0		⑲	-0.2
	⑥	134.0		⑳	GND		③	GND		⑳	-0.4		⑳	-0.2
	⑦	134.0		㉑	0		④	0		㉑	-0.4		㉑	15.3
IC651	①	2.4		㉒	0		⑤	-12.3		㉒	4.9		㉒	15.3
	②	13.8		㉓	0		⑥	4.9		㉓	-5.1		㉓	-0.4
	③	GND		㉔	4.9		⑦	0		㉔	4.9		㉔	GND
IC652	G	GND		㉕	-5.1		⑧	0.8		㉕	0		㉕	GND
	I	-11.5		㉖	0		⑨	0		㉖	4.9		㉖	-14.5
IC653	G	GND		㉗	0		⑩	-0.9		㉗	-0.9		㉗	15.3
	I	10.6		㉘	0		⑪	0		㉘	-0.9		㉘	14.5
IC655	G	GND		㉙	-1.0		⑫	-1.0		㉙	0		㉙	0.2
	I	11.9		㉚	0		⑬	0		㉚	-0.4		㉚	0.2
IC801	①	0.2		㉛	-0.4		⑭	-0.4		㉛	-0.8		㉛	-15.3
	②	1.2		㉜	-5.1		⑮	GND		㉜	0		㉜	0.3
	③	4.9		㉝	4.9		⑯	4.9		㉝	-0.9		㉝	14.5
	④	0		㉞	-5.1		⑰	-5.1	IC808	①	0		㉞	0.1
	⑤	-0.8		㉟	-2.2		⑱	4.8		②	-0.5		㉟	-15.3
	⑥	0	IC804	㊱	0		⑲	0		③	4.9		㊱	0
	⑦	-1.1		㊲	0		⑳	4.9		④	0.1		㊲	0
	⑧	-5.1		㊳	-0.5		㉑	-0.8		⑤	4.7		㊳	0.1
	⑨	0.4		㊴	4.9		㉒	0		⑥	-2.1		㊴	0.1
	⑩	-0.9		㊵	0		㉓	0		⑦	0		㊵	-15.3
	⑪	0.3		㊶	-0.1		㉔	0		⑧	-0.8		㊶	0.2
	⑫	1.2		㊷	0		㉕	-0.5		⑨	0		㊷	-1.2
	⑬	GND		㊸	-0.4		㉖	4.9		⑩	-0.9		㊸	-0.3
	⑭	-1.5		㊹	0		㉗	0		⑪	0		㊹	-0.3
	⑮	1.2		㊺	0		㉘	0		⑫	0.2		㊺	-12.3
	⑯	-1.6		㊻	0		㉙	0		⑬	0.2	IC811	㊻	GND
	⑰	0.5		㊼	0		㉚	0		⑭	-0.5		㊼	0
IC802	①	1.1		㊽	0.5		㉛	0		⑮	0		㊽	0.6
	②	4.9		㊾	4.7		㉜	0		⑯	4.9		㊾	12.1
							㉝	0		⑰	4.8			
							㉞	0		⑱	0			

G BOARD

REF	Pin No.	VOLTAGE	REF	Pin No.	VOLTAGE
Q501	E	GND	Q658	E	0.4
	C	47.0		C	4.9
	B	-0.4		B	0.6
Q502	E	GND	Q659	E	17.6
	C	140.0		C	0
	B	0		B	17.6
Q505	D	9.9	Q660	C	GND
	S	GND		B	0.6
Q506	E	11	Q661	E	2.4
	C	113		C	5.2
	B	1.7		B	3.1
Q507	E	11.5	Q662	E	2.4
	C	780.0		C	4.9
	B	12.1		B	2.7
Q651	E	11.9	Q802	E	4.9
	C	11.9		C	2.3
	B	11.2		B	4.0
Q652	E	GND	Q803	E	2.4
	C	0		C	0
	B	0.7		B	0.5
Q653	E	GND	Q804	E	GND
	C	17		C	0.5
	B	0		B	0
Q654	E	14.0	Q805	E	1.7
	C	GND		C	12.1
	B	13.6		B	2.3
Q655	E	17	Q809	E	-15.3
	C	0		C	-14.3
	B	1.7		B	-15.3
Q656	E	GND	Q810	C	-14.5
	C	13.6		B	-15.3
	B	0			
Q657	E	4.9			
	B	4.9			

G BOARD



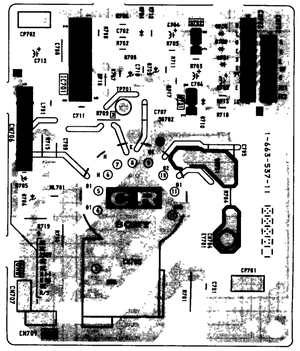
G BOARD * MARK LIST

	KP-46C36/53S35	KP-48S35/61S35
R542	150 1W :RS	68 1W :RS
R544	150 1W :RS	68 1W :RS

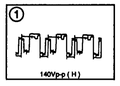
NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

CR [R OUT]

– CR BOARD –



CR BOARD



CR BOARD

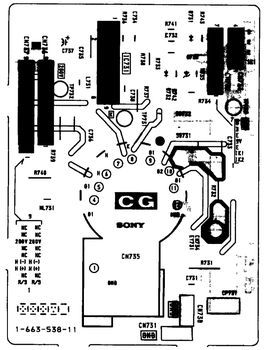
REF.	Pin No.	VOLTAGE
IC701	⑤	2.6
	④	GND
	③	4.1
	②	196.5
	①	137.1
	⑥	135.0

CR BOARD

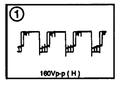
REF.		VOLTAGE
Q701	E	4.4
	C	0
	B	4.1
Q702	E	2.2
	C	GND
	B	1.9

CG [G OUT]

– CG BOARD –



CG BOARD

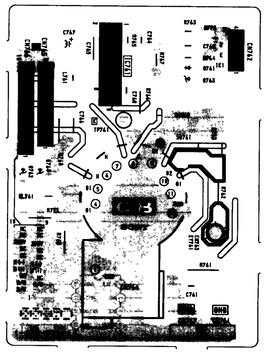


CG BOARD

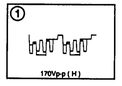
REF.	Pin No.	VOLTAGE
IC731	⑤	2.5
	④	GND
	③	3.5
	②	199.6
	①	145.0
	⑥	144.6

CB [B OUT]

– CB BOARD –

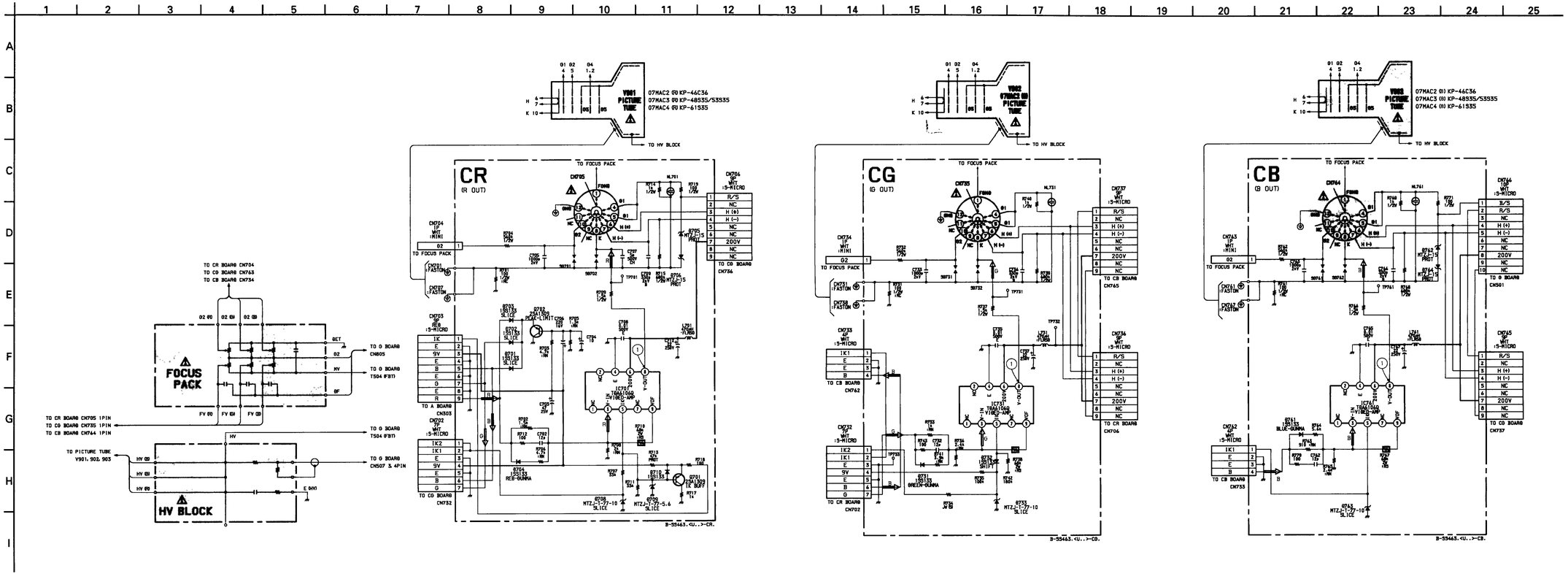


CB BOARD



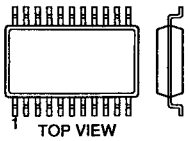
CB BOARD

REF.	Pin No.	VOLTAGE
IC761	⑤	2.5
	④	GND
	③	4.9
	②	196.6
	①	113.0
	⑥	109.7



6-5. SEMICONDUCTORS

BH3856FS-E2
SDA9288X-A141

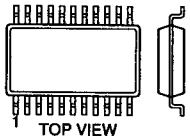


32pin SOP

CA0007AD
NJM2058D
μPC339C

14pin DIP

CA0007AM

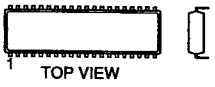


14pin SOP

CXA2025AS

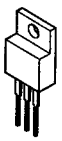
48pin DIP

CXP85112B-613S
CXP85856-005S

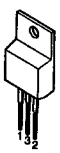


64pin DIP

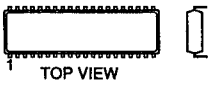
LM7805CT
MC7805CT
MC7812CT
PQ09RF21
TA7805S
TA7812S



MC7905CT



MM1313AD
PM0011AS

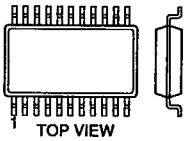


42pin DIP

M5218AP
NJM4558D

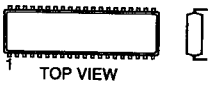
8pin DIP

NJM4558M-T2
ST24C04FM6TR
μPC4558G2
X24C04S8



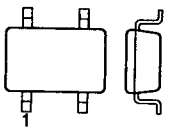
8pin SOP

PA0053B



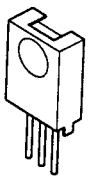
18pin DIP

PST9143NL



5pin chip

SBX1780-51



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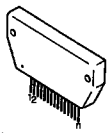

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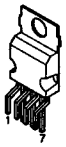

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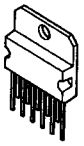

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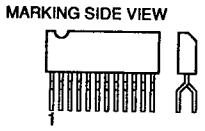

9pin ZIP

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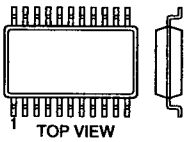

24pin SOP

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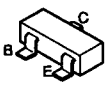

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IRF614-LF

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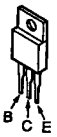
2SC4793



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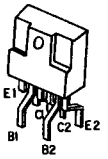

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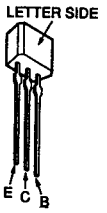
2SC2785-HFE
2SC3311A-QRSTA



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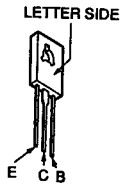

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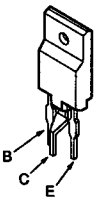

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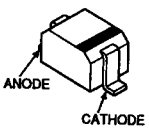
UDZ-TE-17-10B



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GP08DPKG23
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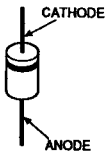
RGP10GPKG23



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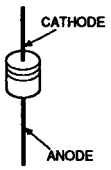
MTZJ-33B
MTZJ-7.5B
MTZJ-T-77-10
MTZJ-T-77-10B
MTZJ-T-11
MTZJ-T-15
MTZJ-T-20A
MTZJ-T-24A
MTZJ-T-3.6
MTZJ-T-30
MTZJ-T-33B
MTZJ-T-39
MTZJ-T-5.1
MTZJ-T-5.1B
MTZJ-T-5.6
MTZJ-T-5.6B
MTZJ-T-7.5B
MTZJ-T-9.1B
RD10ESB2
RD11ES-B2
RD20ES-B2
RD24ES-B
RD3.6ES-B1
RD39ES-B2
RD5.1ES-B1
RD5.1ES-B2
RD5.6ESB2
11ES2



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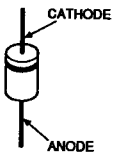

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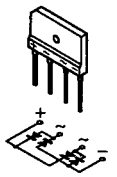
RBA-402LLF-A



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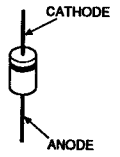

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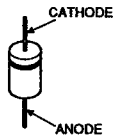

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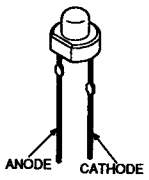


SECTION 7
EXPLODED VIEWS

NOTE:

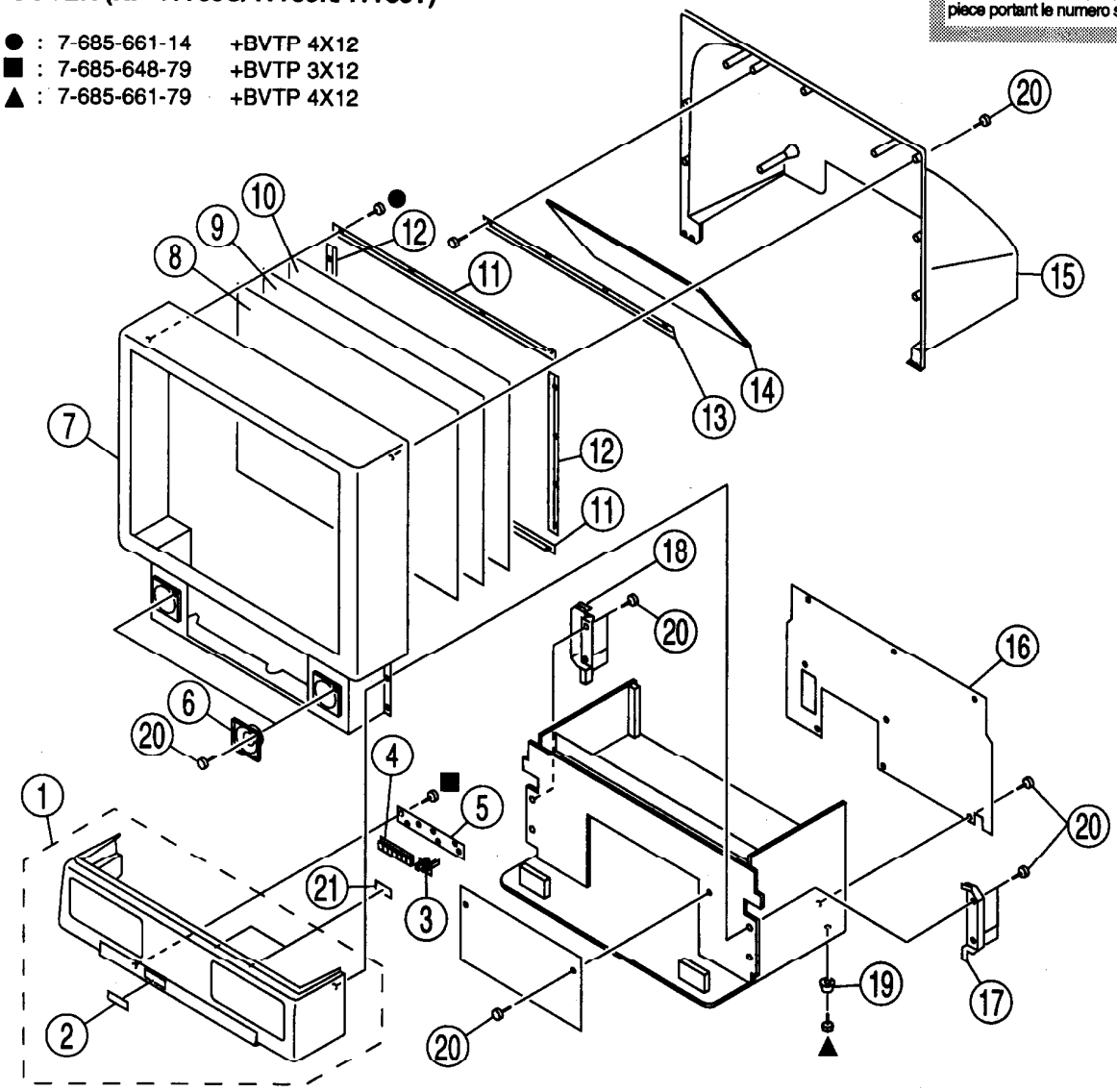
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The componants identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

7-1. COVER (KP-41T35C/41T35K/41T35T)

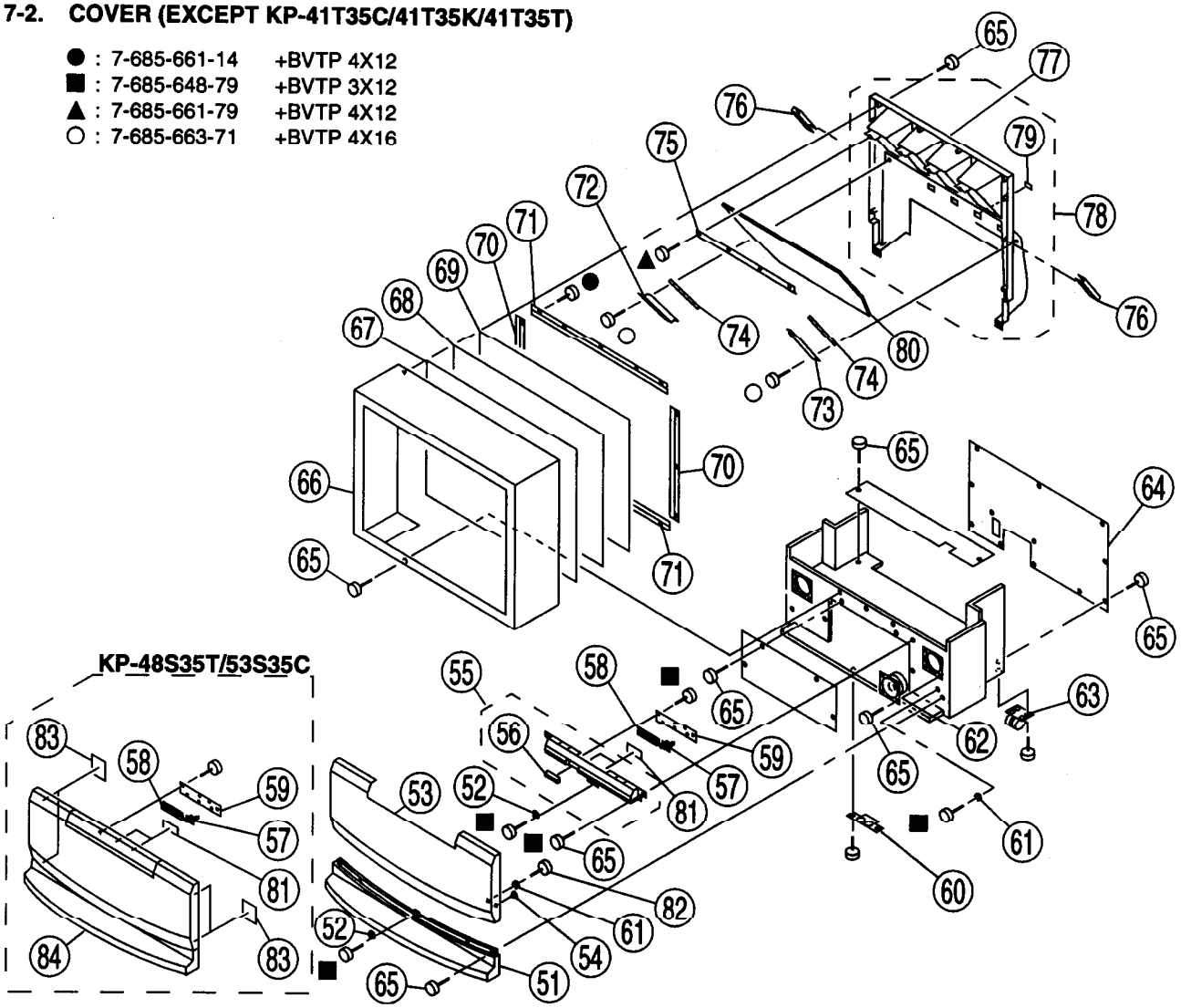
● : 7-685-661-14 +BVTP 4X12
■ : 7-685-648-79 +BVTP 3X12
▲ : 7-685-661-79 +BVTP 4X12



REF. NO.	PART NO.	DESCRIPTION	REMARK
1	X-4034-531-1	CONTROL PANEL ASSY (PTG) (41)	2
2	4-057-605-01	DOOR, CONTROL PANEL	
3	4-057-604-01	GUIDE, LED / IR	
4	4-057-603-01	BUTTON, MULTI	
5	* A-1372-304-A	HA BOARD, COMPLETE	
6	1-505-748-11	SPEAKER (10CM)	
7	X-4034-534-1	BEZNET ASSY (41)	
8	4-034-053-11	PLATE (L), DIFFUSION	
9	4-047-943-11	PLATE (F), DIFFUSION	
10	4-059-006-11	SCREEN (41), CONTRAST	
11	* 4-059-007-01	HOLDER, SCREEN	
12	* 4-059-011-01	HOLDER, SCREEN	
13	* 4-037-351-01	HOLDER, MIRROR	
14	4-047-861-01	MIRROR (41), REFLECTION	
15	X-4032-607-1	COVER, MIRROR	
16	* 4-059-014-01	BOARD (41), REAR	
17	4-057-601-01	CAP (RIGHT) (41), CONTROL PANEL	
18	4-057-600-01	CAP (LEFT) (41), CONTROL PANEL	
19	4-057-611-01	FOOT	
20	4-041-164-11	SCREW (4X20), TAPPING	
21	* 3-551-305-21	CUSHION, PANEL	

7-2. COVER (EXCEPT KP-41T35C/41T35K/41T35T)

● : 7-685-661-14 +BVTP 4X12
■ : 7-685-648-79 +BVTP 3X12
▲ : 7-685-661-79 +BVTP 4X12
○ : 7-685-663-71 +BVTP 4X16



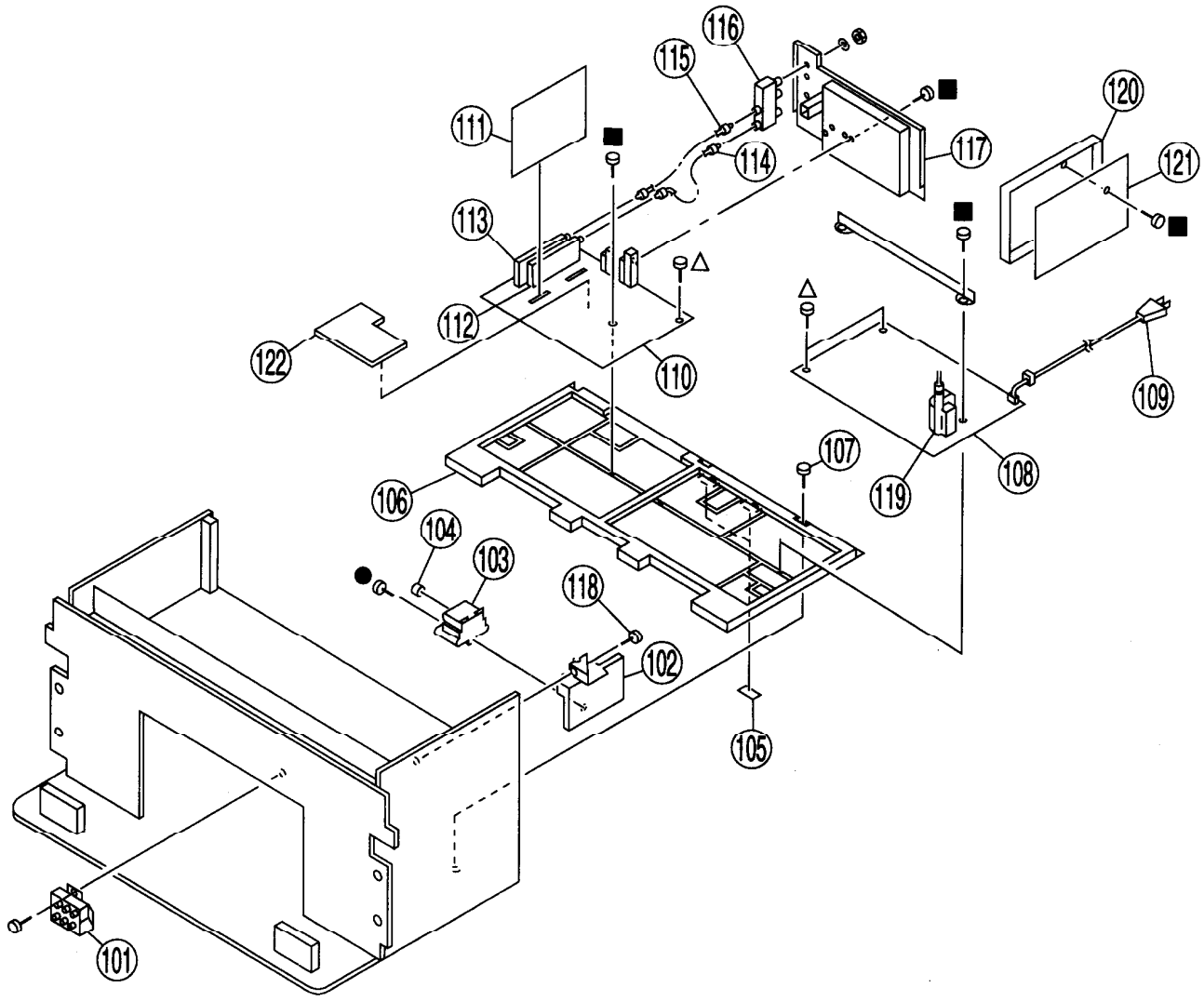
REF. NO.	PART NO.	DESCRIPTION	REMARK
51	4-057-608-01	SKIRT, FRONT	(48V45K/53V45C/53V45K/53V45T)
52	4-843-806-00	STRIKE (48V45K/53V45C/53V45K/53V45T)	
53	X-4034-498-1	GRILLE ASSY, SPEAKER	(48V45K/53V45C/53V45K/53V45T)
54	4-838-438-00	LATCH (48V45K/53V45C/53V45K/53V45T)	
55	X-4034-499-1	PANEL ASSY, CONTROL	56 (48V45K/53V45C/53V45K/53V45T)
56	4-057-605-01	DOOR, CONTROL PANEL	(48V45K/53V45C/53V45K/53V45T)
57	4-057-604-01	GUIDE, LED / IR	
58	4-057-603-01	BUTTON, MULTI	
59	* A-1372-288-A	HA BOARD, COMPLETE (48S35T/53S35C)	
	* A-1372-304-A	HA BOARD, COMPLETE	(48V45K/53V45C/53V45K/53V45T)
60	4-048-175-01	FOOT, PLASTIC	
61	4-058-745-02	VELCRO	
62	1-505-378-11	SPEAKER (10CM) (48S35T/53S35C)	
	1-505-426-11	SPEAKER (10.6CM)	(48V45K/53V45C/53V45K/53V45T)
63	4-040-755-01	CASTER (DIA. 30)	
64	* 4-057-844-01	BOARD (53), REAR	
65	4-041-164-11	SCREW (4X20), TAPPING	
66	X-4032-999-2	BEZNET ASSY (53V)	
67	4-036-466-11	PLATE (L), DIFFUSION	
68	4-059-221-11	PLATE (F), DIFFUSION	
69	4-058-894-11	SCREEN (53), CONTRAST	
70	* 4-048-152-01	HOLDER (S), SCREEN (48S35T/53S35C)	
	* 4-058-892-11	HOLDER (S), SCREEN	(48V45K/53V45C/53V45K/53V45T)
71	* 4-048-159-11	HOLDER (L), SCREEN (48S35T/53S35C)	
	* 4-058-893-01	HOLDER (L), SCREEN	(48V45K/53V45C/53V45K/53V45T)
72	* 4-051-790-02	HOLDER, MIRSD (L)	
73	* 4-051-789-02	HOLDER, MIRSD (R)	
74	* 4-049-098-01	CUSHION	
75	* 4-037-351-01	HOLDER, MIRROR	
76	4-033-775-41	PROTECTOR, MIRROR	
77	4-057-610-01	COVER, MIRROR (48S35T/48V45K)	
78	* X-4032-620-1	COVER ASSY, MIRROR	
79	4-048-150-01	CAP, HOLE	
80	4-048-181-01	MIRROR (53), REFLECTION (53S35C)	
	4-058-545-01	MIRROR (48), REFLECTION (48S35T)	
	4-058-889-01	MIRROR (53), REFLECTION	(48V45K/53V45C/53V45K/53V45T)
81	* 3-551-305-21	CUSHION, PANEL	
82	4-061-050-01	SCREW, PAN HEAD TAPPING (3X16)	(48V45K/53V45C/53V45K/53V45T)
83	4-059-346-01	CUSHION, GRILLE	
84	4-057-597-01	GIILLE, SPEAKER	

7-3. CHASSIS (KP-41T35C/41T35K/41T35T)

● : 7-685-661-14 +BVTP 4X12
■ : 7-685-648-79 +BVTP 3X12
△ : 7-685-650-79 +BVTP 3X16

The componants identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.



REF. NO.	PART NO.	DESCRIPTION	REMARK
101	⚠1-223-925-12	RESISTOR ASSY (HIGH-VOLTAGE)	
102	*4-057-596-01	BRACKET, HV	
103	⚠8-598-955-12	BLOCK ASSY, HIGH-VOLTAGE	
104	4-373-137-01	CAP (Z), RUBBER	
105	*3-551-305-21	CUSHION, PANEL	
106	*4-057-594-01	BRACKET, MAIN	
107	4-052-894-01	SCREW (4X20), HEAD TAPPING	
108	*A-1316-339-A	G BOARD, COMPLETE (41T35C/41T35K)	
	*A-1316-343-A	G BOARD, COMPLETE (41T35T)	
109	⚠1-765-486-11	CORD, POWER (WITH CONNECTOR)	(41T35T)
	⚠1-775-468-11	CORD, POWER (WITH CONNECTOR)	(41T35C/41T35K)
110	*A-1298-072-A	A BOARD, COMPLETE (41T35C)	

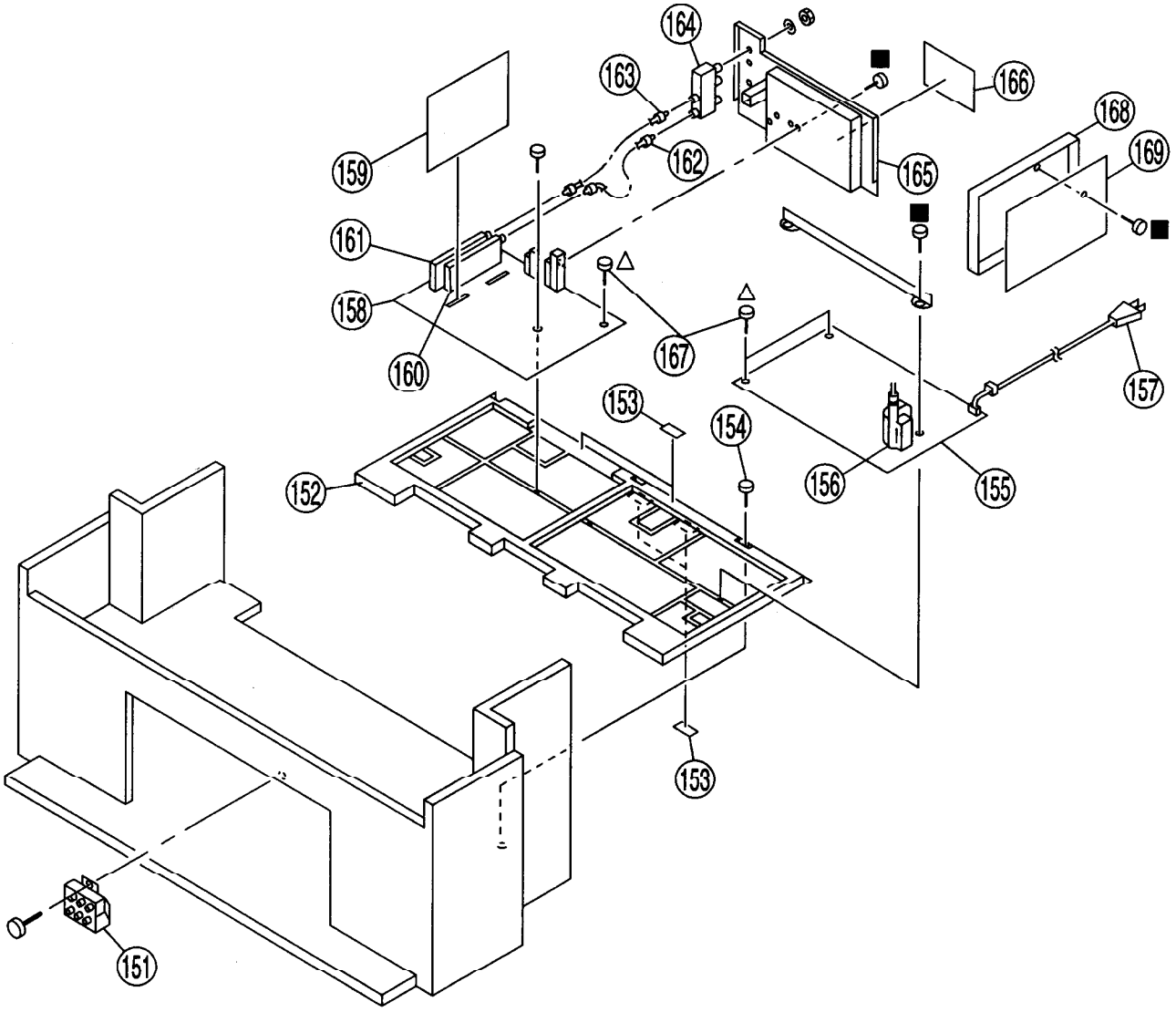
REF. NO.	PART NO.	DESCRIPTION	REMARK
110	*A-1298-274-A	A BOARD, COMPLETE (41T35T)	
111	*A-1190-265-A	PT BOARD, COMPLETE	
112	⚠8-598-339-00	TUNER, FSS BTF-LA402	
113	⚠8-598-340-10	TUNER, FSS BTF-WA404	
114	*1-557-056-31	CABLE, P-P	
115	1-556-945-21	CABLE, P-P	
116	8-598-414-00	ANTENNA SWITCH AS-2F	
117	4-057-595-21	TERMINAL BOARD	
118	4-041-164-11	SCREW (4X20), TAPPING	
119	⚠1-453-248-11	TRANSFORMER ASSY, FLYBACK	(NX-4007//X4T4)
120	*4-060-974-01	BRACKET, F	
121	*A-1241-309-A	F BOARD, COMPLETE	

7-4. CHASSIS (EXCEPT KP-41T35C/41T35K/41T35T)

The componants identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

■ : 7-685-648-79 +BVTP 3X12
△ : 7-685-650-79 +BVTP 3X16



REF. NO.	PART NO.	DESCRIPTION	REMARK
151	⚠1-223-925-11	RESISTOR ASSY (HIGH-VOLTAGE)	
152	*4-057-594-01	BRACKET, MAIN	
153	*3-551-305-21	CUSHION, PANEL	
154	*4-051-790-02	HOLDER, MIRSD (L)	
155	*A-1316-342-A	G BOARD, COMPLETE	(53S35C/53V45C/53V45K)
	*A-1316-344-A	G BOARD, COMPLETE (48S35T)	
	*A-1316-345-A	G BOARD, COMPLETE (53V45T)	
	*A-1316-347-A	G BOARD, COMPLETE (48V45K)	
156	⚠1-453-238-11	TRANSFORMER ASSY, FLYBACK	(NX-4007//X4A4)
157	⚠1-765-486-11	CORD, POWER (WITH CONNECTER)	(48S35T/53V45T)
	⚠1-775-468-11	CORD, POWER (WITH CONNECTER)	(48V45K/53S35C/53V45C/53V45K)
158	*A-1298-067-A	A BOARD, COMPLETE (53V45C)	
	*A-1298-201-A	A BOARD, COMPLETE (53S35C)	
	*A-1298-272-A	A BOARD, COMPLETE (48V45K/53V45K)	

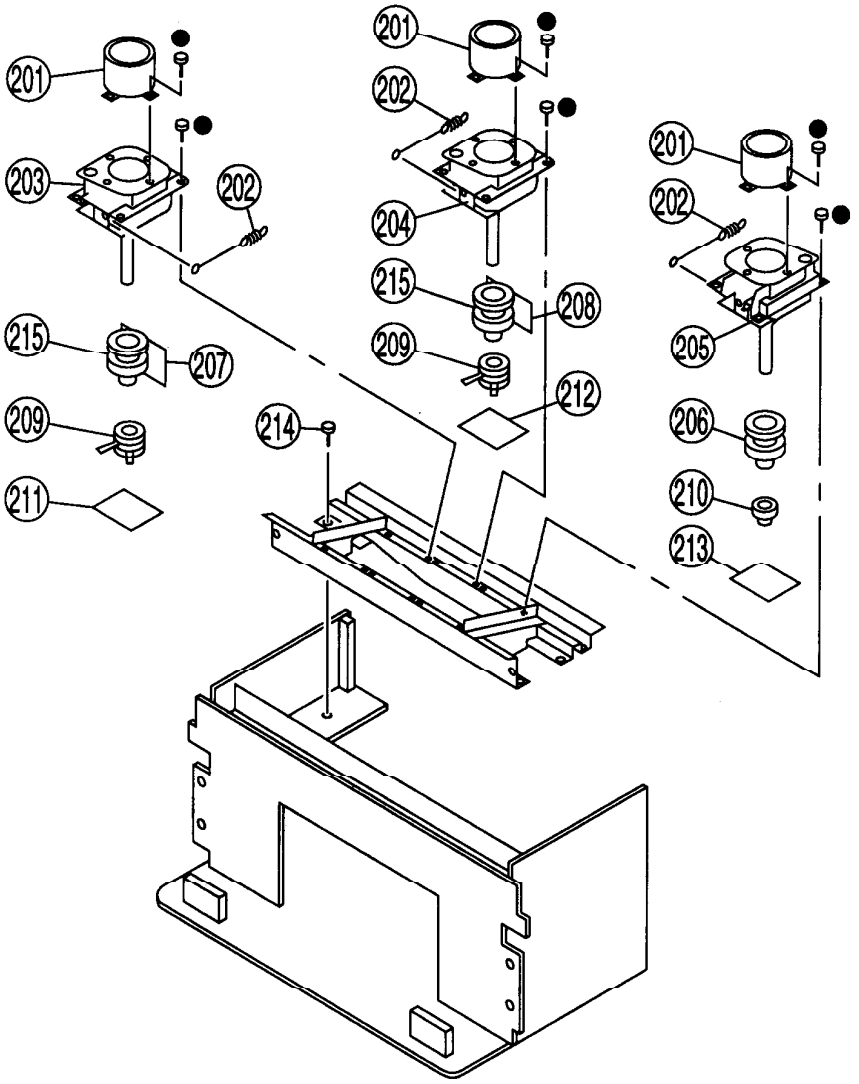
REF. NO.	PART NO.	DESCRIPTION	REMARK
158	*A-1298-275-A	A BOARD, COMPLETE (48S35T)	
	*A-1298-276-A	A BOARD, COMPLETE (53V45T)	
159	*A-1190-264-A	PV BOARD, COMPLETE	(48V45K/53V45C/53V45K/53V45T)
	*A-1190-272-A	PS BOARD, COMPLETE (48S35T/53S35C)	
160	⚠8-598-339-40	TUNER, FSS BTF-LA402	
161	⚠8-598-340-10	TUNER, FSS BTF-WA404	
162	*1-557-056-31	CABLE, P-P	
163	1-556-945-21	CABLE, P-P	
164	8-598-414-00	ANTENNA SWITCH AS-2F	
165	4-057-595-11	TERMINAL BOARD	
166	4-058-896-01	LABEL, TERMINAL	(48V45K/53V45C/53V45K/53V45T)
167	4-041-165-01	SCREW (3X12), TAPPING, +BV (53V45 ONLY)	
168	*4-060-974-01	BRACKET, F	
169	*A-1241-309-A	F BOARD, COMPLETE	

7-5. PICTURE TUBE (KP-41T35C/41T35K/41T35T)

The componants identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.

● : 7-685-661-14 +BVTP 4X12



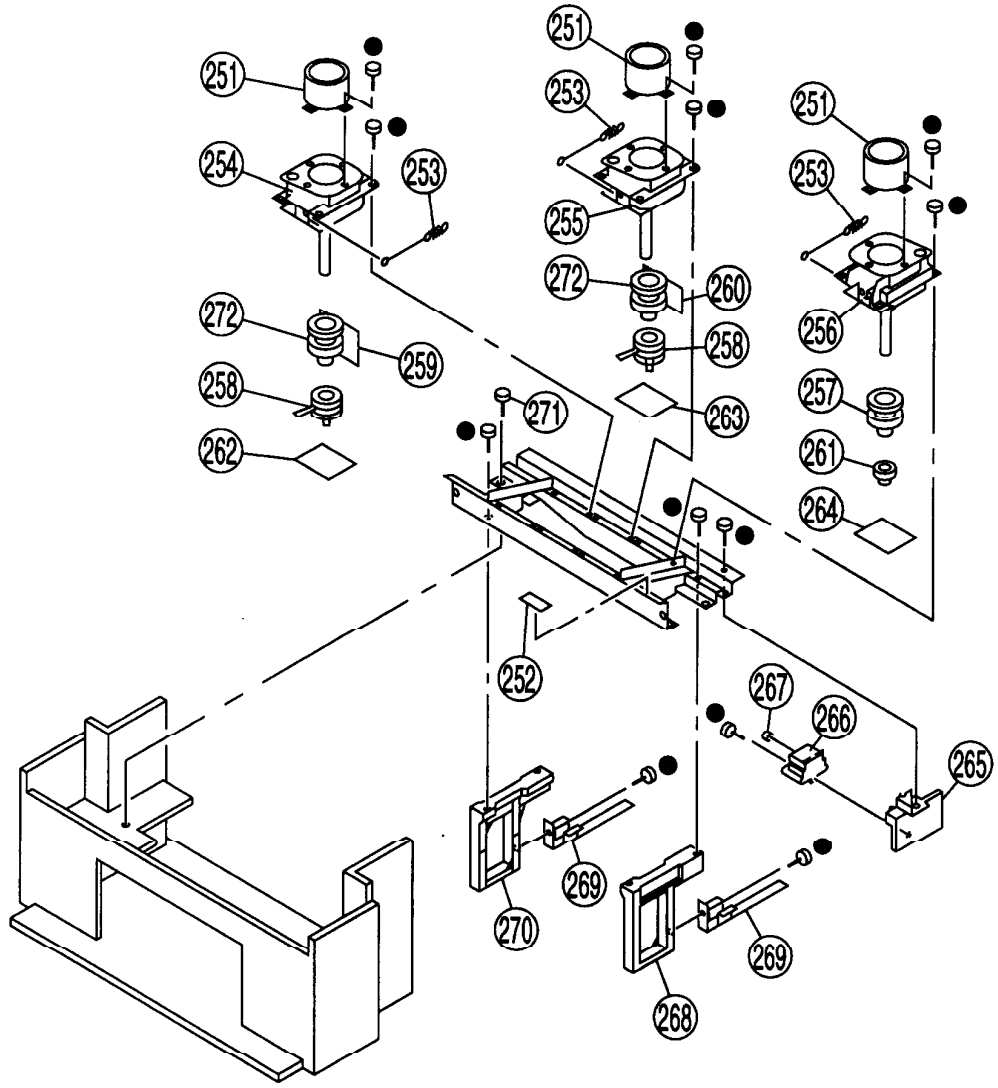
REF. NO.	PART NO.	DESCRIPTION	REMARK
201	4-056-258-01	LENS (DELTA 78)	
202	4-048-142-01	SPRING, TENSION	
203	⚠8-733-527-05	PICTURE TUBE 07MAC2(R) (H)	
204	⚠8-733-525-05	PICTURE TUBE 07MAC2(G) (GCH)	
205	⚠8-733-526-05	PICTURE TUBE 07MAC2(B) (H)	
206	⚠1-451-454-21	DEFLECTION YOKE (B)	
207	* A-1390-682-A	ZR BOARD, COMPLETE	
208	* A-1390-765-A	ZG BOARD, COMPLETE	
209	⚠1-452-790-21	NECK ASSY	
210	1-452-909-21	MAGNET ASSY, 4 POLE	
211	* A-1331-723-A	CR BOARD, COMPLETE	
212	* A-1331-671-A	CG BOARD, COMPLETE	
213	* A-1331-672-A	CB BOARD, COMPLETE	
214	4-052-894-01	SCREW (4X20), HEAD TAPPING	
215	⚠1-451-454-11	DEFLECTION YOKE (R) (G)	

7-6. PICTURE TUBE (EXCEPT KP-41T35C/41T35K/41T35T)

● : 7-685-661-14 +BVTP 4X12

The componants identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifies par une trame et une marque ⚠ sont critiques pour la securite.
Ne les remplacer que par une piece portant le numero specifie.



REF. NO.	PART NO.	DESCRIPTION	REMARK
251	4-056-258-01	LENS (DELTA 78)	
252	* 3-551-305-21	CUSHION, PANEL	
253	4-048-142-01	SPRING, TENSION	
254	⚠ 8-733-498-05	PICTURE TUBE 07MAC3 (R) (LONG NECK) (GA)	
255	⚠ 8-733-518-05	PICTURE TUBE 07MAC2 (G) (GC)	
256	⚠ 8-733-497-05	PICTURE TUBE 07MAC3 (B) (LONG NECK) (GA)	
257	⚠ 1-451-455-21	DEFLECTION YOKE (B)	
258	⚠ 1-452-790-21	NECK ASSY	
259	* A-1390-682-A	ZR BOARD, COMPLETE (48V45K/53V45C/53V45K/53V45T)	
	* A-1390-767-A	ZR BOARD, COMPLETE (48S35T/53S35C)	
260	* A-1390-683-A	ZG BOARD, COMPLETE (48V45K/53V45C/53V45K/53V45T)	
	* A-1390-768-A	ZG BOARD, COMPLETE (48S35T/53S35C)	
261	1-452-909-21	MAGNET ASSY, 4 POLE	
262	* A-1331-670-A	CR BOARD, COMPLETE (48V45K/53V45C/53V45K/53V45T)	
263	* A-1331-668-A	CG BOARD, COMPLETE (48S35T/53S35C)	
	* A-1331-671-A	CG BOARD, COMPLETE (48V45K/53V45C/53V45K/53V45T)	
264	* A-1331-669-A	CB BOARD, COMPLETE (48S35T/53S35C)	
	* A-1331-672-A	CB BOARD, COMPLETE (48V45K/53V45C/53V45K/53V45T)	
265	* 4-057-596-01	BRACKET, HV	
266	⚠ 8-598-955-12	BLOCK ASSY, HIGH-VOLTAGE	
267	4-373-137-01	CAP (Z), RUBBER	
268	4-057-613-01	BOARD (R), SIDE	
269	4-058-638-01	STAY, CHASSIS	
270	4-057-612-01	BOARD (L), SIDE	
271	4-052-894-01	SCREW (4X20), HEAD TAPPING	
272	⚠ 1-451-454-11	DEFLECTION YOKE (R) (G)	